The Mining Journal

Established 1835 — Railway & Commercial Gazette

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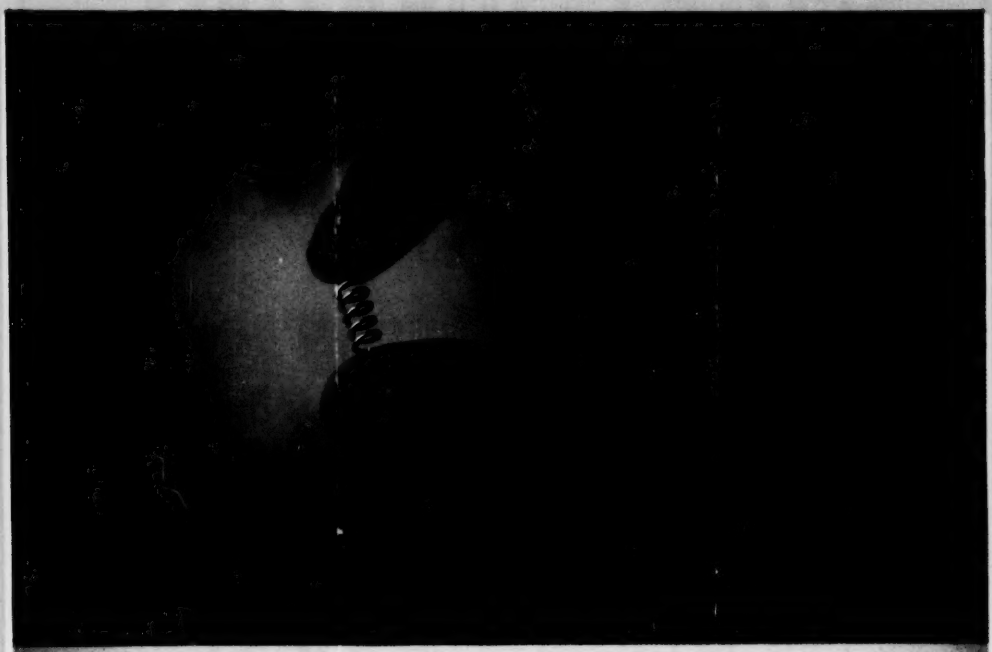

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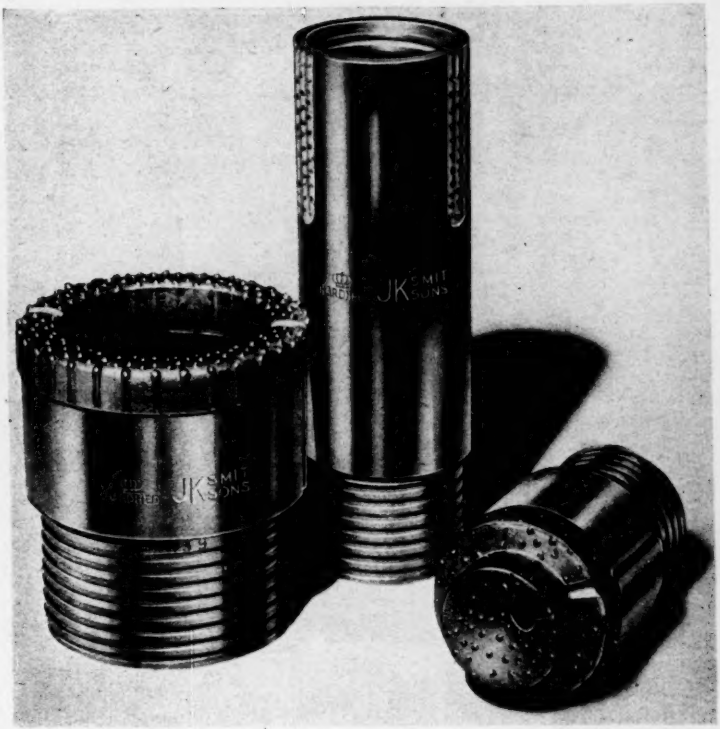

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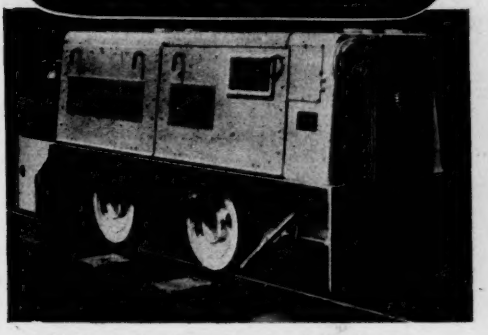

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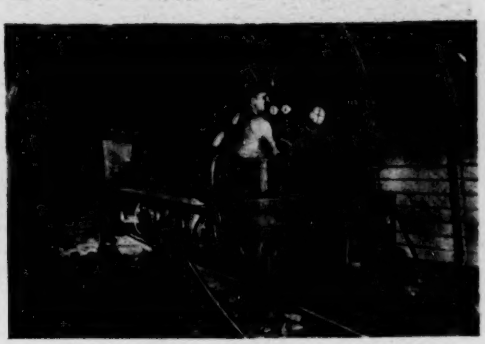

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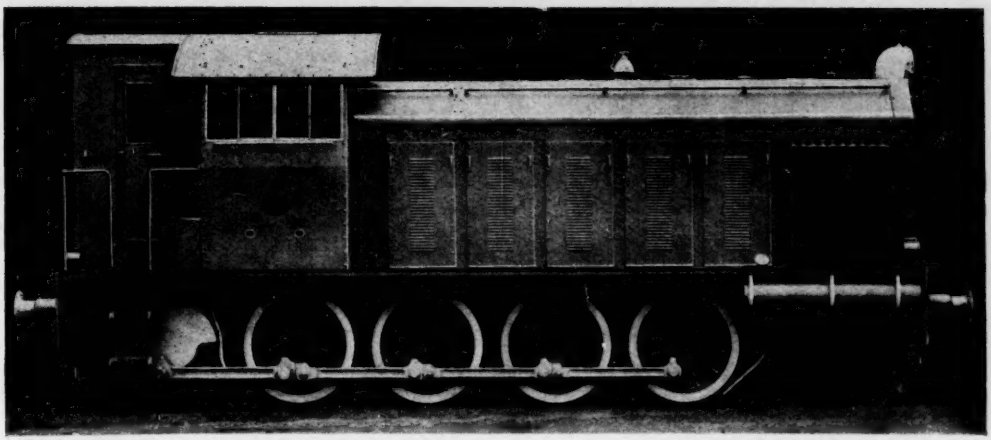

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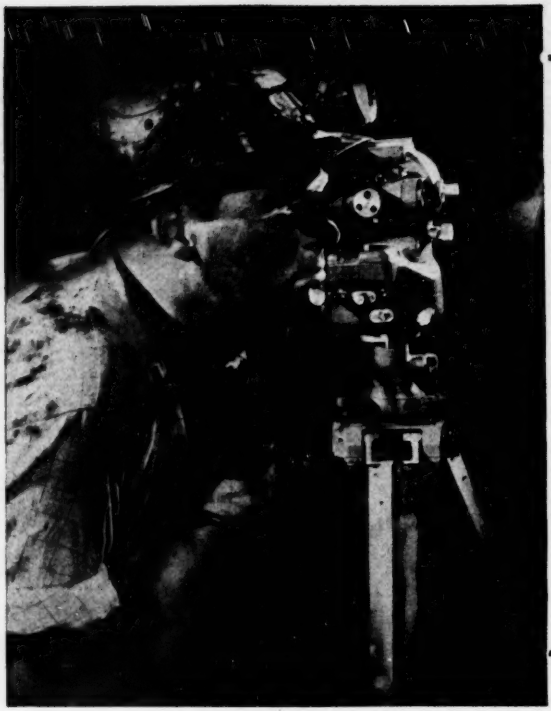

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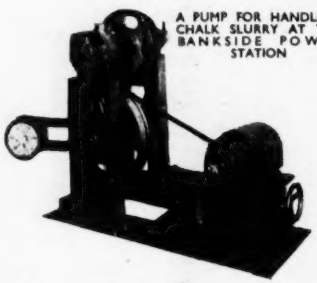

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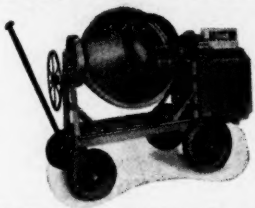

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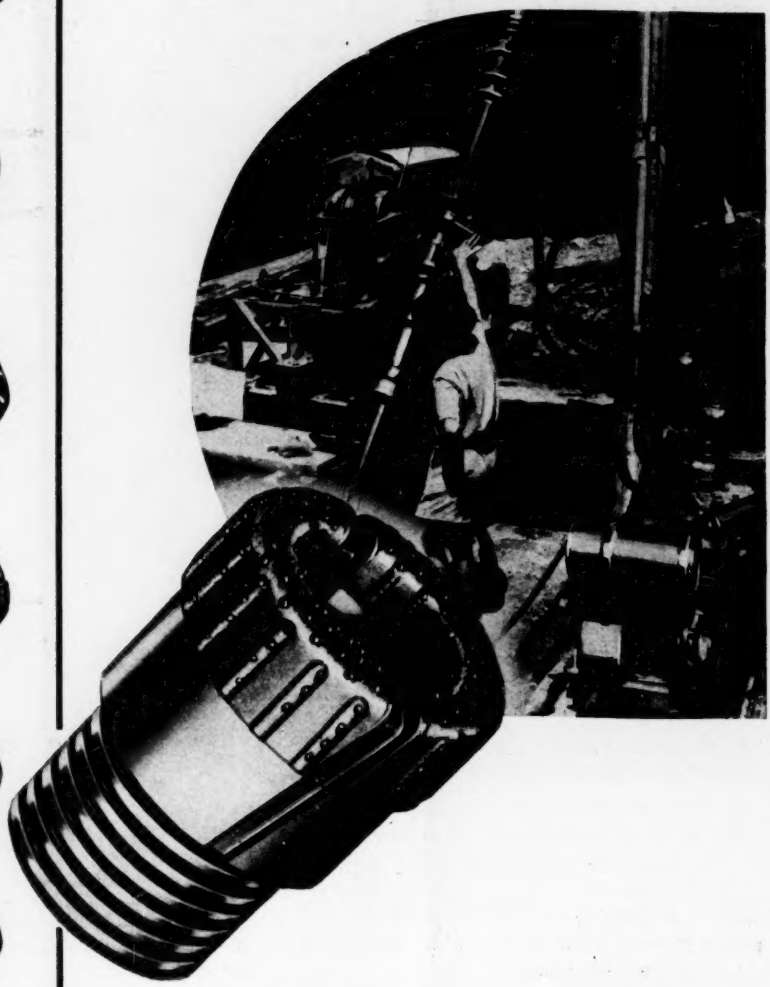

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The Mining Journal

Established 1835

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NOTES AND COMMENTS

A Year's Work of the I.M.C.

The first annual report of the International Materials Conference published this week, and covering the twelve months to March 1 last sheds valuable light on this important, if somewhat veiled, organization. In the spheres of supply and allocation of various scarce materials and to some extent in price stabilization this organization has done useful work. Indeed, without its operation it is impossible to judge how serious a situation might have developed in various quarters. The convinced support of most, if not all of its members, has been instrumental in its successful functioning aided to no small extent by various commodities having priced themselves outside the financial ability of some States to compete. Incidentally, the high prices for many metals and minerals has helped to stimulate output and so rendered the task easier.

Whilst the provision of some metals and ores is expected to be a problem for some time to come, the general situation has greatly eased in the period under review. Lead has not worried the Conference to the extent of making any allocations necessary. The supplies of zinc have improved rapidly, and in the second half of the year the metal may even be removed from the scarce list. Copper is the third metal in this group but the day of an ample supply is not yet.

Sulphur remains one of the most difficult materials with an output estimated for the current year at 6,100,000 tons against demands for some 7,700,000 tons, and the shortage is expected to continue next year in a similar degree. Nickel is another essential metal where continuance of the critical supply position will be maintained certainly for the whole of the current year, with output estimated at 139,000 tonnes against requirements of 223,000 tonnes. An increase in manganese ore of 9 per cent is forecast for the current year, making a total supply of 1,745,000 tonnes against estimated requirements of 1,840,000 tonnes. Tungsten is expected to be in short supply, not only this year but for some time beyond it; production for the first six months is estimated at 8,200 tonnes of metal content, but production is said to be rising substantially. Broadly speaking molybdenum is in much the same position, with shortage expected beyond the end of the current year, despite increases in supply. Cobalt despite a big increase is budgeted for 10,600 tons of primary metal against a demand of 17,500 tons.

The question of whether to continue the International Materials Conference in view of the satisfactory showing for the first year has been raised, and it has been suggested that it might be converted into a price stabilization medium. Obviously such an extension of its main objectives requires very considerable reflection. There is a widely expressed anxiety in all commercial circles to get rid of national controls as quickly as possible, and international controls would probably be even more unpopular. In particular, such a step would seem to infringe severely on the rôle which the London Metal Exchange so adequately discharged before the war. But of course the urgent need to conserve dollars may by itself prevent the extension of free dealings on the London Metal Exchange as a world market, at any rate for the present.

Another function which the Conference has discharged has been the encouragement of plans for expansion of production, its best economic utilization, and the promotion of possible substitutes.

Gold Coast Producers to Sell Whole Output in Free Market

The official announcement from Accra last week that the Gold Coast producers can now sell the whole of their output on the free market for an indefinite period is welcome news indeed, although complete satisfaction that this decision has been taken is diluted somewhat by the steady decline of the free market price, which currently is standing around the $37 per f.oz. mark.

While it was expected that the recent decision taken by the Southern Rhodesian Government to allow the whole of the Colony's output to be sold at premium prices would strengthen the hands of those in West Africa who also wanted the 40 per cent maximum abolished, it was not perhaps generally anticipated that the Gold Coast Government would allow its gold producers to sell the whole of their production on the free market so soon as they did.

The Gold Coast's production in 1951 amounted to 699,000 oz. and it is believed that producers there have been receiving a premium of between 15s. and 20s. an ounce.

Current U.S. Views on Lead

The rapid alterations in the lead picture which characterized the situation in the last nine months or so, lend particular interest to the symposium afforded by the meeting of the Lead Industries Association in Chicago, in the middle of last month. The material information disclosed, as well as the individual speakers, represent American experience if not comprehensive of the whole world.

The primary consideration which emerged from the conference was expressed by Dr. Zimmerman, editor of *The Daily Metal Reporter*, when he stressed the fact that the lead shortages which gave rise to the Controls have disappeared and that the industry now faces a surplus. Under these circumstances he considered that the time had come for the National Production Administration and the Office of Price Stabilization to scrap all regulations and price controls and to restore complete freedom to the industry. Were it not for the retention of a provision in the recent tariff suspension measure that duties would be reimposed were the domestic price to fall below 18c. per lb., the market would not, in his opinion, remain as steady as it is. This week the A.S. and R. Co. have cut their price to 18c. possibly with a view to getting the duty re-imposed. It followed naturally from Dr. Zimmerman's call for complete removal of controls in the U.S. that he was critical of the Defence Materials Production Agency's plan to acquire lead for civilian and defence uses, and transfer any unwanted metal to the national stockpile, as this would only serve to prolong Government control when there was no need for it.

As regards current production and prospects, the feeling was expressed that domestic output would be maintained and that the long term prospects at least for its continuance were good. Mr. George B. Sawyer, vice-president of the Cerro de Pasco Corporation, anticipated an increase in production from Peru which this year might reach 80,000 s.tons of recoverable lead of which 52,000 s.tons would be smelted by the Corporation's own plant. With further improvements at the smelter, their production may reach 75,000 s.tons in a few years time and by that time the total Peruvian output should be about 100,000 s.tons as compared with 67,251 s.tons in 1950. The American Smelting & Refining Co.'s representative said that new lead mining developments at Mount Isa, Buchans and in Mexico, justified the conclusion that the A.S. and R. Coy's output would be maintained at current level for a number of years. Besides producing properties in Mexico the Nuestra Señora Mine should be brought into production within a couple of years and the old Plumosas Mine re-opened. Before that, however, the company hopes to be producing from the Chilete property in Peru and given the continuance of good prospecting results another producer may be forthcoming from Nigeria.

Another speaker called attention to the progress made in Eastern Morocco with the Sté. des Mines de Zellidja and the Royale Asturienne des Mines and the Nord Africaine du Plomb prominent. In the sphere of uses the representative of the Western Electric Co. instanced the unprecedented demand for telephone cable in face of the great shortages in lead and copper as having led to new developments and substitutions.

In the case of oxides the experience is much the same as in cables, the critical lead shortages of last year having promoted research for substitutes and intensified economy in use. The battery and ceramic industries took nearly two-thirds of the 177,000 s.tons of lead oxides shipped last year leaving about 57,000 s.tons for paint, chrome colours, oil refining, insecticides and other miscellaneous uses. In ceramics too, American consumers have sought to find lead substitute materials the results of some of which will certainly be permanent. In the chemical industry the use of lead has steadily been increasing since 1940, according to the general manager of the Lone Star Lead Construction Co., Mr. J. D. Magee, who further claimed that lead construction prices were still in line with more competitive products and in some cases even cheaper.

Norwegian Minerals in 1952

Details of Norwegian imports and exports of metals and minerals have been recently published by the Central Bureau of Statistics. These show a continuance of the adverse balance of trade, writes our Norwegian correspondent, though the gap is not so great as in the previous year. The total value of the imports was Kr.6,264.4 million and of exports Kr.4,428.4 million. Thus the value of imports exceeded exports by Kr.1,836 million compared with Kr.2,057.1 million in 1950. The following are the principal items:

IMPORTS

Imports of fuels improved and aggregated 1,482,565 tonnes compared with 1,301,346 tonnes in the previous year. Coke supplies however dropped to 193,537 tonnes (394,353). Among non-metallic minerals cryolite was lower at 2,975 tonnes (3,228). Gypsum imports, however, increased to 30,445 tonnes (23,401).

Ores and Slag.—Imports of manganese ore rose to 201,624 tonnes (162,176); and zinc concentrate were better at 98,895 tonnes (71,237). On the other hand chromite was lower at 49,918 tonnes (52,462); bauxite at 20,151 tonnes (37,157), and alumina at 75,657 tonnes (81,012). Imports of non-ferrous metals were generally substantially less. Raw copper totalled 1,709 tonnes; tin imports made 514 tonnes; and lead 7,515 tonnes. However, raw alumina improved to 1,694 tonnes and wrought aluminium to 1,255 tonnes.

Precious Metals.—Imports of fabricated silver were lower at 17,970 kilos but there was a big increase in raw platinum to 52,532 grammes.

EXPORTS

In non-metallic minerals labradorite and cyanite improved to 70,990 tonnes (6,898); ground dolomite and limestone totalled 11,702 tonnes (9,443); graphite was nearly doubled at 3,647 tonnes (1,902); and feldspar improved to 31,421 tonnes (20,846). On the other hand decreases were shown in sulphur at 70,170 tonnes (76,162) and mica at 547 tonnes (571).

Ores and Slags.—Molybdenite shipments re-commenced and totalled 326,375 kilos (50); and copper concentrates were better at 11,440 tonnes (6,390); on the other hand, copper matte fell to 13,789 tonnes (16,406); cupreous pyrites to 131,227 tonnes (202,742); iron pyrites to 162,436 tonnes (186,324); iron ore exports declined to 269,080 tonnes (283,033).

Metals and Alloys.—In the ferro-alloys, ferro-silicon was lower at 50,135 tonnes (53,652), and ferro-manganese at 80,431 tonnes (83,497); but ferro-chrome improved to 21,971 tonnes (16,411); ferro-silicon-manganese to 22,843 tonnes (19,490); and pig-iron to 40,301 tonnes (26,415).

In the non-ferrous group raw aluminium totalled 41,881 tonnes against 40,351, but raw copper fell to 6,536 tonnes (9,053); raw zinc to 29,215 tonnes (33,148); and raw nickel to 9,729 tonnes (9,800).

In the chemical group nitrate of lime improved to 838,265 tonnes against 743,628 tonnes; but other items all declined; calcium carbide to 19,084 tonnes (25.155); calcium cyanimide to 14,230 tonnes (42,960) nitrate of soda to 4,604 tonnes (5,989); and nitrate of ammonia to 1,734 tonnes (1,858).

I.M.M.'s Annual Dinner

The annual dinner of the Institution of Mining and Metallurgy was held in the handsome setting of the hall of the Goldsmiths Company on April 24, Sir Lewis Fermor presiding. The toast of "The Institution" was proposed by Mr. R. L. Prain, Chairman of the British Overseas Mining Association.

SOME PROBLEMS CONFRONTING THE BRITISH OVERSEAS MINING ASSOCIATION

Mr. Prain said that when B.O.M.A. was formed some seven years ago they little foresaw the very difficult times into which they were running. While the successes of the Association had been small, perhaps they had been able to prevent worse things happening, and by "running very fast we have managed to keep in the same place." They had had to fight the profits tax (unsuccessfully); last year they were threatened with dividend limitation, and then came the last election when one party promised dividend limitation and the other promptly countered it by promising excess profits tax. Under this regrettable tax, mining companies were caught out either way. If they increased production they paid 95 per cent tax on the increase, and in the other event they were liable to penalty on a charge of decreasing production and sabotaging the national effort. With this prospect it was little wonder that he was turning his attention in his spare time to the subject of prison reform.

The tax, Mr. Prain went on, cut right across the development of the Colonies, and he for one held the view that the development of the Colonies was one of the very few ways open to this country to promote its recovery. He felt that something must and would be done with regard to mining taxation.

But the problem facing the overseas mining industry was not one of taxation only but also that of a political kind such as was being experienced in Mexico and Persia, and problems of nationalization as in Burma. More recently they had heard about the nationalization of tin mines in Bolivia. Nationalization of the mining industry in any part of the world must affect the industry in the rest of the world. The mining and metal industry was one industry, and if a great group of mines was nationalized in one country it must affect the others because it led to government selling, and government selling usually led to government buying. Thus they could not watch these developments with any equanimity.

They had their problems also of labour, the unions problem, and in some countries such as Northern Rhodesia the rise of unionism and the rise of nationalism were one and the same thing. There was the legitimate aspiration of native peoples to take the jobs held by Europeans. As someone in Northern Rhodesia had put it, "Give us the jobs and we will finish the tools."

WHAT CONSTITUTES AN ORE BODY IS AN ECONOMIC CONSIDERATION

One school of thought in this country believed that we were near the end of the mineral resources of the world; another school did not believe this. His own view for what it was worth was that they first had to decide how much metal they wanted, because the consumption of metals was tied up very closely in the long run with population trends, and when they thought of the rate at which the world's population was increasing it was impossible to think of metals being required in a smaller degree than at present, and over a long period an increased demand for metals must continue. There were minerals everywhere—there was no shortage—but what constituted an ore body was an economic consideration, and their task was to try to create economic conditions under which what was considered at present uneconomic might become economic.

PRESIDENT ON INSTITUTION'S WORK

Sir Lewis Fermor, in replying for the Institution, said that it could claim some paternity for the British Overseas Mining Association. In 1943, the Institution arranged a symposium on mining taxation, out of which symposium arose the Mine Taxation Committee, and this eventually led to the formation of the Association. He referred also to other symposiums and conferences arranged by the Institution, including the forthcoming one, next September, on mineral dressing. The membership of the Institution was just over 2,500, the highest in its history, and a recent increase of subscription had not resulted in any diminution of membership but rather the reverse. Some 60 per cent of the members were overseas.

Sir Lewis Fermor concluded with an interesting speculation as to the "coin" in which the Phoenicians paid for the tin they took from this country. At that time this country was self-sufficing in food and also in wool, and he suggested that the tin was taken in exchange for woad, which was not indigenous here but was the product of a Mediterranean plant.

PROSPECTING IS AN EXPENSIVE BUSINESS

Mr. Vernon Harbord, President-elect, proposed the health of the distinguished company of guests, a toast to which response was made by Dr. G. M. Lees, President of the Geological Society of London, and Mr. J. Ivan Spens, Chairman of the London Tin Corporation. Dr. Lees said that it had been suggested in some quarters that mining concerns had been led up the garden path by the geologist and the mining engineer, and before they knew where they were £250,000 was spent. As an oil man, what impressed him was the modesty of this estimate. In the oil fields they could do much better than that. He personally in connection with the Anglo-Iranian Co. had been concerned in exploration in many parts of the world. Leaving Persia aside for the moment, one of their endeavours was in Papua, New Guinea, where they had been looking for oil for many years, and since 1912 his own and other companies had spent on exploration a total sum of something like £10,000,000, and so far they had had nothing from it. Evidently mining people had got to get their ideas on a broader basis. Dr. Lees went on to say that it was sometimes asserted that in this little country of ours we were short of important minerals; but if we looked for them it was quite surprising what a number of things might be found. Somehow it was much more difficult to put across to financial directors the fact that minerals were recoverable here than that they were recoverable in some distant, almost inaccessible part of the world.

In conclusion he referred to the situation in Persia and in particular to the position of the technical men who had been engaged in the Persian enterprise. Most of them had now got other jobs, but it should be remembered what a catastrophe it was for technical personnel to be deprived of the work which they had built up with such pride and expectation. They were often reminded of the sacrifices of those who had lost their money, but these others deserved some sympathy too.

COLONIAL MINERALS DEVELOPMENT—VIII

The Federation of Malaya

By A. G. THOMSON

In the following article—the eighth in a series devoted to the mineral wealth of the British overseas territories—details are given of Malaya's mineral resources: tin, gold, iron, coal, tungsten, etc., and the principal factors responsible for the suspension of prospecting is also described.

The Federation of Malaya was the first of the dependent territories, with the exception of Jamaica, to have a Geological Survey, but whereas Jamaica's Geological Survey has been intermittent, that of Malaya has been continuously in action since 1903, and geologists worked in the country even before that date.

The Malay Peninsula lies between the first and sixth parallels of latitude and between east longitudes 100° and 104°, and has an area roughly the same as that of England. Over 1,000 miles of metre-gauge railway provide Malaya wtih cheap and efficient transport, all the principal mining areas being connected to the ports.

WORLD'S LARGEST TIN PRODUCER

Although the Federation of Malaya is a relatively small country, it is nevertheless the largest tin producer in the world, and last year it contributed 57,167 tons of tin in concentrates to a total world production of 164,500 tons. Tin mining is carried on in Perak, Selangor, Negri Sembilan, Pahang, Kedah, Perlis, Kelantan, Trengganu, Johore and Malacca. The only tin ore which has any importance in Malayan mining is cassiterite, tin dioxide, and its occurrence in the Malay Peninsula appears to have been known for many centuries. Thus, there is evidence that the Ptolemies knew of these deposits at the time when the Phoenicians were streaming for tin in Cornwall. Chinese records over 500 years old refer to the discovery of tin in the mountains of Malacca and state that men were sent to supervise the mining of it. The discovery of the rich tin-fields of Larut was the main cause of the development of Malaya because it was the faction fights between the various Chinese clans which took place there in the 'seventies, which led to British intervention.

About 95 per cent of the Malayan tin production comes from alluvial deposits and 5 per cent from lodes. The most efficient method of mining low-grade deposits is by dredging and, in December 1951, there were 83 dredges in operation. The bucket dredge used in Malaya is of the endless chain type and floats in an artificially-made pond or "paddock" which it digs as it progresses. This method is cheap and has enabled much ground of low value to be profitably worked. Where the bedrock is soft, the whole of the tin-bearing ground can be excavated, but losses occur when bedrock consists of limestone pinnacles, because the richest material is contained in inaccessible channels and hollows. Despite its low cost per cubic yard, the bucket-dredge is not, therefore, an ideal form of mining in all areas.

The gravel pump method is popular with the Chinese miners, who were responsible until recently for roughly 40 per cent of the Malayan tin output. In this method, a pressure pump is generally used to feed monitors, which give jets of water powerful enough to cut and distintegrate the ground. The broken material is washed along a channel in the bottom of the mine to a sump, whence it is lifted by the gravel pump to the head of a palong or flume, which may be anything from 40 ft. to 120 ft. above the sump. The heavy tin ore is held up in the palongs by wooden bars or stops, most of the lighter sand and clay passing out of the palong with the stream of water. After several days the flow of water and sand from the gravel pump is shut off or diverted, the mixture of tin ore and sand in the flume is then further concentrated by raking it against a flow of water. There were 584 gravel pump mines in operation in December, 1951, 24 by Europeans, and 560 by Chinese.

PROSPECTING ALMOST COMPLETELY SUSPENDED

Reserves of alluvial ores are dwindling, and the decline has been particularly marked in the past decade, during which time prospecting for new deposits has been almost completely suspended, first because of the war, and subsequently as a result of the emergency caused by the terrorists. Since the reoccupation of Malaya, tin mining has also been hampered by shortage of electrical power, and the problem of unskilled labour has been aggravated by the drift of labourers to rubber small-holdings which offered very high wages.

Increased realization prices have made it possible to work lower grade ground, but any substantial drop in the metal price would close down the marginal propositions. It is most important, therefore, that the great areas of virtually unexplored country should be examined as soon as possible, to see whether there are reserves of tin ores which have not yet come to light.

EXPLOITATION OF LODE MINES

It is considered very unlikely that alluvial tinfields comparable in size with those of Kinta, Lualа Lumpur and Taiping will be found, but there might be a possibility of locating tin lodes which would give more permanency to the mining industry. Although most of the output of the Peninsula comes from alluvial deposits, lodes and other ore bodies are also being exploited, and, in fact, one of the largest and most productive lode mines in the world is in Malaya. This is situated near the east coast of Pahang, where an extensive deposit, comprising a large series of lodes in schist near to a granite mass, is worked by the Pahang Consolidated Co., Ltd. The company has more than 150,000 acres, but the lode-mines are in a small area forming only a fractional part of the concession. The lodes were originally worked by Chinese, and nothing was attempted below water level. Europeans first started mining in 1887, and have worked there continually since that time. When the mines are in full production, employment is given to over 3,000 persons. In the 25 years preceding the second world war, more than 60,000 tons of concentrate were produced from these lodes, which show promise of continuing to be large producers for many years.

Lodes are known in the Main Range of granite mountains that divides Pahang from Selangor. Practically all the known ore bodies were discovered by the removal of overburden during the course of ground-sluicing operations at the time when this form of mining was permitted, and it

is very probable that others still remain to be found in many parts of the Main Range.

GOLD PRODUCTION

Production of gold during 1951 amounted to 17,018 f.oz., which compares with 40,210 oz. in 1938. Geological investigations have shown that gold, like tin and tungsten, has originated in the granite. Gold quartz is widespread in a belt extending from the boundary between Malacca and Negri Sembilan into Siamese territory, but the only known lodes of any size are those of the Raub Australian Gold Mining Co., which are worked by underground methods. The lodes vary in width from a few feet to 75 ft. and their gold content from the merest trace to an ounce or more per ton. During the last 60 years, output has been approximately 800,000 oz. When the Japanese occupied Malaya, the workings were abandoned and became flooded. Mining has been resumed, however, and it is from the Raub mine that most of Malaya's current production is derived. Other prospects have revealed gold quartz that is locally quite rich, but the deposits pinch out. Detailed surveys of parts of the Malayan gold-belt have indicated that gold lode-mining is unlikely ever to be important in Malaya. Some gold is also obtained from alluvial deposits as a by-product from tin mining operations west of the Main Range.

MALAYAN IRON ORE FOR JAPAN

Malaya is also an important Eastern producer of iron ore. This industry was started in 1921, solely by the Japanese, and played a major part in providing Japan with an essential material for war production. Approximately more than one-third of the annual iron ore requirements of the Japanese steel industry came normally from this source. From 1,135,648 tons in 1934, production was expanded to 1,615,542 tons in 1942, all of which went to Japan. Certainly Britain cannot be accused of reserving the products of her dependent territories for her own requirements. In fact, this ore could not have been shipped economically to the U.K. on account of the high freight charges but the Japanese Government subsidized a fleet of steamers in order to overcome this difficulty. Japan is again using this source of iron ore and last year's output amounted to 846,803 tons.

It is probable that there remain considerable supplies of iron ore not yet located, which are hidden by the thick cover of soil and vegetation that obscures so much of the surface of the country. Pre-war prospecting revealed several extensive deposits of high-grade ore, quite apart from very widespread concretionary deposits of ironstone known as laterite, which are used locally as road metal.

Bauxite, discovered and mined by the Japanese in Johore, South Malaya, was also important to Japan's war effort, though to a lesser extent than iron ore. Exports to Japan during the years 1936, 1937, and 1938 amounted, respectively, to 36 tons, 12,628 tons, and 55,751 tons. The Japanese continued mining during the war and opened up new deposits in Malacca, where they produced several hundred thousand tons. The allied navies, however, were able to prevent shipments in any quantity from reaching Japan. There is at present no recorded production, but two companies, Aluminium Laboratories Ltd., and the British Aluminium Co. Ltd., have prospected new deposits in Johore.

Coal of Tertiary age is being successfully mined by Malayan Collieries Ltd., at Batu Arang in Selangor. From 1915 till the end of 1951 this company's total production has been approximately 13,000,000 tons, the output for 1951 being 382,539 tons. The product is of a lignite type and unsuitable for ships' bunkers, but it is in great demand for local consumption and plays a very valuable part in the national economy, especially as a fuel for the railways and the tin mining industry.

There is a small production of the tungsten ores, wolfram and scheelite. The largest deposits of wolfram are found in Kedah and Trengganu located in schist near granite. Scheelite is found at several places in Perak and Selangor. Until it gave out in 1939, the Kramat Pulai deposit was one of the richest in the world; it made Malaya the third largest producer of tungsten ores from 1933 to 1936 inclusive.

INCREASED SHIPMENTS OF ILMENITE

Small amounts of manganese were mined by the Japanese before the war. China clay occurs in great quantities, but mining is confined to producing the comparatively small amounts required for local use, principally in the manufacture of rubber goods. Ilmenite is the chief constituent of amang in North Malaya, amang being the heavy, dark-coloured residue after the separation of tin ore from alluvial deposits. Before the war, there was little margin between costs and selling price, because the Malayan tinfields are all situated inland and the charge for transport to the sea is rather heavy. At present prices, the export of ilmenite has become more profitable, however, and shipments rose to 43,493 tons in 1951 compared with 6,462 tons in 1938. Other constituents of amang include zircon and monazite.

GEOLOGICAL SURVEY DEPARTMENT'S ROLE

The Geological Survey Department was founded primarily to help the Malayan mining industry and arrangements were made with the Straits Settlements, and with what used to be known as the Unfederated States, to extend the geological survey into their territories. As a result, a geological map of the whole of Malaya, scale 12 miles to an inch, was published in 1930 and revised editions are issued periodically. A more detailed survey of certain districts was undertaken in order to estimate their mineral resources. This work was interrupted by the war and by the Japanese occupation, and in view of Malaya's dwindling reserves of tin, it is particularly unfortunate that prospecting operations are now being prevented by terrorists.

The Geological Survey Department has been extended from seven geologists and chemists in 1941 to fourteen at the present time, and still more will be appointed later. Some members of the Department have been engaged solely in security work, connected with the emergency, and have been unable to continue their geological work, and the proposed programme for field work has had to be very drastically curtailed. Geological field work, however, has been started in North Trengganu, and besides detailed work in the Besut area, a reconnaissance of the country extending north-eastwards from Bukit Chintawasa, until recently unsurveyed, will shortly be carried out. In Kinta, records of the geological formations exposed in mines have been kept up-to-date and the compilation of material to be included in the new Memoir on the Kinta district has been started. Information from mines in the Kuala Lumpur area has also been collected. Various memoirs by members of the geological staff have been published or are in preparation.

The Director of Colonial Geological Surveys, Dr. F. Dixey, C.M.G., O.B.E., stated in his Progress Report for 1951, that the number of assays carried out in Malaya last year constituted a record. However, the acquisition of land for new headquarters under the expansion scheme still awaits the approval of the Government and it is likely that the emergency and the rise in building costs will affect the progress of the building programme.

Novel Drilling Barge for Lake Maracaibo

To meet drilling operations in the deeper waters of Lake Maracaibo, Venezuela, a self-contained Diesel electric power barge has been built in this country for the Shell organization by Ferguson Brothers (Port Glasgow) Ltd. This barge, although not an entirely new departure in marine or inland water drilling technique, is the first of its type to be built and equipped in this country.

The craft, which houses the main Diesel electric power plant, together with other major and ancillary equipment and materials associated with oilwell drilling operations, will be used in conjunction with a piled steel structure permanently erected at each well site.

The barge construction is in accordance with Lloyd's rules and requirements Class A (Drilling Barge for service on Lake Maracaibo or other enclosed waters) and has a displacement of approximately 2,545 tons, the principal dimensions being as follows: Length moulded, 158 ft. 0 in.; breadth moulded, 80 ft. 0 in.; depth moulded to main deck at sides, 10 ft. 0 in.; designed draft (d) about 7 ft. 6 in.; moulded height of pipe deck above main deck at centre line, 10 ft. 0 in. The design embodies arrangements and facilities for making it a self-sustaining power unit for drilling operations over a period of 30 days without refuelling. Stowage and consumable stores comprise the following main items: Well casing and drill piping, 290 tons; fluid drilling mud, 550 tons; sacked dry drilling mud/barytes, 90 tons; diesel fuel oil, 150 tons; lubricating oil, 2 tons; drinking water and engine circulating water, 25 tons; sanitary water, 3 tons; miscellaneous well drilling supplies, 150 tons, and crude oil, 75 tons.

Welding is used to the maximum extent in the construction of this barge and except for a forward ramp end to facilitate mooring in the vicinity of the drilling rig platform, the under-water profile is rectangular box shaped.

The main deck accommodates the main engine or power house, a barytes store, core shed, electrician's store, engineer's store, crew mess and wash-place. The top deck or pipe deck extends practically over the full width of the barge and is specially arranged for stowing and handling drill pipe, casing and tubing. To facilitate the loading and stowing of drill pipe, casing, barytes and other stores, an electric motor driven luffing crane of three tons capacity at 25 ft. radius is installed on both the port and starboard sides of the pipe deck.

For mooring the barge, four electric motor driven anchor winches are situated on the main deck, dual control permitting operation from either the control platform situated on the pipe deck or at the winch station itself.

The main power plant consists of four 12-cylinder V-formation, pressure charged 4-stroke Diesel engines operating at 650 r.p.m., each direct coupled to a 450 kW D.C. generator. The main engines are fitted with turbo chargers and have a normal 12 hour rating of 910 b.h.p. and a continuous rating of 698 b.h.p. when allowing for site temperature and humidity. In addition two auxiliary generating sets are provided.

The main 450 kW D.C. 450 V. (FL.)/520 V. (NL.) variable voltage generators are designed to give the full load output at 450 V. Each generator is of two-field design, a shunt field separately excited from the pony mounted amplidyne exciter and a differential series field.

Each generator is equipped with "drill-hoist" contactors which are under the control of their associated "drill-off-hoist" selector switches on the driller's panel. Thus, from one to four generators may be transferred from drilling to hoisting by operation of their respective selector switches. When these selector switches are in the "off" position, neither the hoist nor the drill contactor will be closed.

MAIN MOTORS

Installed below the main deck are three variable speed D.C. motors, two of 800 h.p. rating suitable for a speed variation from 720 to 72 r.p.m. These are each independently connected through a 2 in. pitch quadruple chain drive to the two main mud pumps which handle the mud flush requirements to the rig during drilling operations. On the port side of these two pumps a 300 h.p. motor with a speed range of 750 to 75 r.p.m. is directly coupled to a high pressure multi-cylinder pump provided for cementing operations. A 150 h.p. motor having a speed range of 900 to 90 r.p.m. is coupled through a V-belt drive to an auxiliary mud pump installed on the starboard side of the main pumps. A second identical 150 h.p. motor furnishes the drive to the coring reel unit.

Two D.C. motors will also be installed on the drilling platform, namely, the drawworks motor with a normal rating of 800 h.p. and similar to the main mud pump motors and the rotary table motor, rated at 300 h.p. which has similar characteristics to the high pressure cement pump motor.

The two 8¼in. x 16 in. horizontal duplex main mud circulating pumps are equipped with 3,500 p.s.i. working pressure fluid ends and have a nominal input rating of 825 h.p. at 65 r.p.m. The auxiliary 7¼ in. x 12 in. horizontal duplex pump which has an input rating of 165 h.p. at 65 r.p.m., is provided for mud mixing and other utility purposes. The high pressure multi-cylinder cementing pump is designed for working pressures up to 10,000 p.s.i. and is equipped with three 4¼ in. plungers and three 3½ in. plungers. In conjunction with the mud circulating pumps, a mud ditch system is incorporated on the main deck, complete with dual shaker screens, settling pits and chemical tank, etc.

NOVEL CONSTRUCTION OF DRILLING PLATFORM

During drilling operations, the barge can be moored at a distance varying from 25 to 120 ft. from the permanent drilling platform, which in itself is of novel construction. It comprises chiefly a prefabricated structure having four corner groups of three 20 in. diameter steel caissons of suitable length to meet the depth of water at the proposed location. The whole rectangular box shaped structure is fabricated on shore, transported by crane barge to the desired site and placed bodily into position on the sea bed, the lower end of the caissons becoming partially embedded by virtue of the weight of the whole structure. This assembly forms a jig for the 13 in. steel tubular piles which are inserted into the upper open end of the 20 in. caissons and driven to refusal in the lake bed by means of a piling barge. Fin-type guides are spaced at intervals on the outside of the 13 in. piles to ensure concentricity within the caissons. Concrete is then placed inside and around the 13 in. piles to form a solid reinforced pile structure which should adequately serve the expected production life of the well. Finally, on the top of this piled substructure, and at a suitable height above water level, a structural steel platform is erected to accommodate the 136 ft. high x 30 ft. base drilling derrick, drawworks, rotary table and their associated electric motors, etc.

Flexible cables and control lines from the power barge

to the drilling platform supply the power to the motors installed on the latter and also provide the driller with remote control of certain equipment on the barge. For example, the two 800 h.p. mud pump motors will each have a master switch at the drawworks position and on the barge, permitting control from either station, but not simultaneously from these points. On both the derrick platform and barge are mounted suitable panels equipped with plug receptacles to receive the coupler plugs of the interconnecting power cables and control lines. A telephone system between the drilling platform and the barge will permit the driller to have direct contact with seven principal operating stations on the barge and communication with shore headquarters will be maintained by radio.

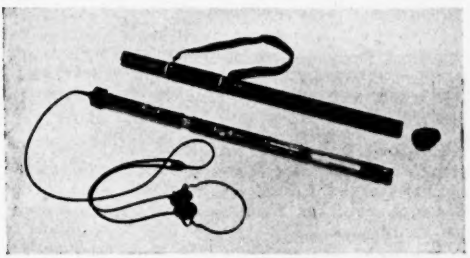
This self-contained, mobile power unit barge, when used in conjunction with the drilling platform, will be capable of drilling to depths of 15,000 ft. in the deepest waters of the lake at locations 15 miles or more from the shore.

ADVANTAGES OF DIESEL-ELECTRIC POWER

Selection of Diesel-electric power, as opposed to steam generating equipment has, despite the higher initial capital outlay, many advantages to offer. Chief amongst these is the elimination of the feedwater problem which confronts the operator of steam-raising plant on marine craft, in which category this unit can be classed. Although more skilled supervisory and maintenance personnel will be required, resulting in higher daily operating costs, it is expected that, on a long-term basis, this will be offset to an appreciable extent by savings in fuel consumption, plant maintenance and replacement costs. Another advantage is the reduction of the fire hazard which exists when steam-raising equipment is used in close proximity to drilling operations. The flexibility and ready means of disconnecting the power supply cables and control lines between the barge and drilling patform, constitute a considerable advantage should adverse weather or other emergency necessitate the withdrawal of the barge to a safe distance from the well site. Finally, an intrinsic feature, and one not to be ignored entirely, in favour of the Diesel-electric installation, is the facility it affords the crew and operating personnel for "good housekeeping," which contributes appreciably to efficiency.

The EKCO "Prod" Portable Radioactive Ore Detector

A simplified form of Geiger Muller Counter—known as the EKCO "Prod"—intended for use in searching for radioactive materials was shown by E. K. Cole Ltd. at the Physical Society Exhibition. This instrument, which is illustrated below, weighs only 3¼ lb. and may be carried in one hand like a wand and used as a probe or may be slung from the body.



The EKCO "Prod"—a portable instrument for the detection of radioactive materials

The use of equipment incorporating Geiger Muller tubes for the detection of radioactivity is now well-known. A voltage pulse is generated as a result of a single initiating particle or photon, the presence of radioactivity being indicated by an increase, above the normal background, in the rate of arrival of the voltage pulses. There are three convenient methods of observing this increase, namely:

(i) Listening to audible clicks by means of an earpiece, etc., and counting the number heard in a unit time;

(ii) Adding electronic equipment to enable the pulses to actuate a mechanical register, and

(iii) Adding electronic equipment to enable the pulses to be stored and presented as a direct reading of the mean rate of arrival.

Additional electronic equipment and associated power supplies increase the complexity and weight of prospecting instruments—a serious consideration in equipment which may be used hundreds of miles from the nearest technician.

The EKCO "Prod" employs the first above mentioned method and has been designed to achieve maximum convenience and simplicity. There are no controls, no interconnecting cables apart from the headphones, and no electronic circuitry. The only replacement required is the battery, the life of which depends on the climate and not on use. In temperate climates, the life is between six and nine months. The life of the EKCO Halogen-quenched Geiger Muller tube is not affected by use; this is in striking contrast to earlier types in which under extreme conditions it might be a matter of days only. Another advantage of this tube is that the polarizing voltage is reduced from over 1,000 volts to less than 400 volts. Apart from the reduction in size and weight, this means a considerable saving in the cost of replacement batteries.

CAN BE USED BY THE UNSKILLED

The equipment as dispatched from the factory is immediately ready for use, except for the assembly of the headphones. The current drain from the batteries is so small that an on/off switch is not required. Immediately the headphones are plugged in, the instrument is ready for use. The amplitude of the clicks is adequate even under very noisy conditions, since the pulses are shaped and amplified by a specially designed output stage. The sensitive area of the instrument is between approximately four and eight in. from the pointed or lower end. If this area is approached towards a radioactive source, an increase in the rate of arrival of the "clicks" will be noted in the headphones. The nearer the instrument is moved to the source the greater will be the increase. By careful observation of this change of rate the exact position of the source may be located. The "strength" of the radioactive source cannot easily be estimated, however, since the radiations are attenuated by the mass of any material through which they may have to pass to reach the "Prod."

The instrument is eminently suitable for use by unskilled persons and this has considerably increased the number and types of people who can search for radioactive ores. Though it is both waterproof and ruggedly built, it is nevertheless important to treat it with the care normally taken with a scientific instrument.

Atomic Minerals in Brazil

(From Our Own Correspondent)

Teresopolis, April 19.

The Department of Mineral Production is collaborating with Professor Djalma Guimaraes, of the National Research Council, in carrying out extensive investigations of uraniferous mineral deposits in Sao Joao d'el Rei in the State of Minas Geraes, in the States of Bahia, Espirito Santo as well as in North-East Brazil. A complete aerial survey, with scintilometric counters, as recommended by Messrs. Ernest Franklin and Douglas H. Pearson of Harwell, is being made in order to hasten the work. A portable scintilometer has been built in Brazil and a number of others are being ordered for distribution throughout the country in order to facilitate research.

The results to date are sufficiently promising to allow a start to be made with the production of atomic energy in Brazil, and Professor Guimaraes has recently informed the Press that the deposits of atomic minerals in Minas Geraes may prove to be as important as those in the Belgian Congo. Credits of £10,000 and £26,000, respectively, were opened in April to continue research at Sao Joao d'el Rei and in surrounding municipalities and in North-East Brazil. Investigations are now proceeding at Parelhas, Acari and Equador in Rio Grande do Norte.

MONAZITE IN SAO PAULO

The Geographic and Geological Institute reports occurrences of monazite sands in the Paraiba Valley and Itapecerica, S. Paulo, the samples from Itapecerica having a high thorium content. The Science Director of the Research Council is reported to have stated that there is reason to believe that thorium will play an equal, or more important, part than uranium in the production of atomic energy in the near future and that monazite—of which Brazil and India possesses the largest deposits—is the only known mineral from which thorium can be extracted.

Admiral Alvaro Alberto, of the Research Council, who returned from the United States in April, has succeeded in acquiring a cyclotron, now building in Chicago, and an atomic reactor. The latter is intended for experiments and for training research workers—Brazil's fundamental problem; a more advanced reactor will be obtained when the necessary staff has been secured. While in Washington, Admiral Alvaro Alberto met Sir John Cockroft and arranged future scientific interchanges between Great Britain and Brazil.

U.S. INTEREST IN BRAZILIAN WOLFRAM

Renewed interest is being shown in the U.S.A. in Brazilian wolfram. Exports rose to 946 tons in the first ten months of last year, after dropping from 2,039 tons in 1945 to 567 in 1949. In 1945, the entire wolfram shipment went to the United States, as against 5.4 per cent in 1949 and 78.3 per cent last year. Last year, Great Britain took 131 tons, smaller quantities going to Holland and Australia. The price per ton has risen from £518 16s. in 1945 to £1,469 11s. in 1951. In the United States, the unit of tungsten imported, namely 20 lb. of oxide of tungsten contained in the ore, was quoted at $U.S.23, c.i.f., in July, 1950, and $U.S.60 in 1951. Brazil's sales were effected at $U.S.64.

Tungsten ores are found in North-East and South Brazil, and scheelite, with 70 per cent of tungsten, is exploited in ten municipalities in Rio Grande do Norte and three in Paraiba. The exact output of the Paraiba deposits is not known, but James S. Baker, of the Foreign Economic Administration, estimates that they are more extensive than any others recently discovered.

Wolframite is also mined in S. Paulo, near Jundiai and in the municipality of Sorocaba; and tungsten ores, so far unexploited, occur in Minas Geraes and in Bahia. The wolframite mines of Novo Trento, Brusque and Itajai, in Santa Catarina, yielded approximately 30 tons last year, while those of Encruzilhada and Piratini, in Rio Grande do Sul, exported 13 tons in 1950, the latest date for which statistics are available.

REVIEWS

Quin's Metal Handbook, 1951.—*Pp.* 656. *Obtainable from the publishers, Metal Information Bureau Ltd., Birkett House, 27, Albemarle Street, London, W.1. Price* £1 *(post free).*

The new 1951 issue—the thirty-eighth annual edition—of this international reference book on metals is larger than any of its predecessors, containing extensive details relating to prices, production, consumption, exports, imports, brands, stocks, analyses, properties and uses, weights, etc., of a wide range of ferrous and non-ferrous metals, ores and scrap. Although official statistics in some countries are still very belated in appearing, the latest available information is given and, with a smaller delay in printing and publication this year, the data given is as up-to-date as possible.

Much useful and informative memoranda is again included, a new feature being the inclusion of a multilingual dictionary of technical terms relating to the non-ferrous metals industry; this being a companion feature to a similar dictionary for iron and steel which proved a popular innovation in the last edition.

The Stock Exchange Official Year Book, 1952.— *Vol.* 1. *Thomas Skinner & Co. (Publishers) Ltd., 330, Gresham House, Old Broad Street, London, E.C.2. Price (for the two volumes): £7 net; by post (inland): £7 2s. 6d.*

The *Stock Exchange Official Year Book*, in its 79th year, is again published in two volumes and in order to equalize their size, a change has been made in the division of the contents. The Financial Trusts Land & Property and the Investment Trusts sections have been transferred to Vol. 1 and, therefore, Vol. 2, to be published in September next, will contain only the Commercial & Industrial and the Mines sections.

Particulars of the Iron & Steel Corporation of Great Britain, with a table of compensation values of securities of companies taken over, have been added to the Public Board section and notices of the various iron and steel companies now owned directly or indirectly by the Corporation are included in the Iron, Coal & Steel section.

The Republic of Ireland having ceased to be a part of H.M. Dominions, the details of the Irish Government and Corporation loans have been transferred from the Dominion and Colonial sections to the Foreign sections.

Science for Coal-Mining Students.— *By J. Stevenson and W. Miller. 1952, London: The Technical Press, Kingston Hill, Surrey. Pp.* 250; *Figs.* 169. 5½ *in. x* 8¼ *in. Price* 21*s. net.*

The object of this book is to provide a background of scientific knowledge upon which coalmining is based, and meet the need for a textbook of science dealing with the problems mining students face.

British Industries Fair 1952

John Blackwood Hodge & Co., Ltd.

This year, the Blackwood Hodge Organisation has a greatly enlarged stand (No. 1305/1204, Castle Bromwich), to accommodate their exhibits, including the Standard and Quarry Type Rear Dump Euclids, which are now in quantity production and available for sterling. British Euclids are powered by the Model UE680 6-cylinder Leyland Diesel engine rated at 154 b.h.p. at 2,000 r.p.m. which will be exhibited separately. Euclid Rear Dump Wagons are built by Euclid (Gt. Britain) Ltd. at the Newhouse Works in Scotland and distributed by the Blackwood Hodge Organisation.

The Model 200 Carlisle Heavy Duty Road Grader

An item of particular note on the Blackwood Hodge Stand is the British-built Model 200 Carlisle Heavy Duty Road Grader, which features an exceptionally heavy gauge frame of immense strength, Leyland Diesel-powered tandem drive, interchangeable wheels and fingertip hydraulic controls throughout. It is built at Workington by The Distington Engineering Co., a subsidiary of The United Steel Companies and is distributed throughout the world by the Blackwood Hodge Organisation.

Also, for the first time at the B.I.F. the Blackwood Hodge Organisation will exhibit complete Carlisle Angle-dozing Equipment for Standard Gauge D.4 Caterpillar Tractors, also distributed throughout the world by the Organisation.

The English Electric Co., Ltd.

The English Electric Co. (Stand No. C613/512, Castle Bromwich), will exhibit the following items: A typical Diesel power-house layout, comprising a 4RK Mark II Diesel engine with alternator and exciter, together with Type O.B.2 switchgear and Combination Fuse Switchboard; A comprehensive range of "English Electric" Fusegear; Unitised Switchgear Cubicles; rectifiers including a 50 kW. 550 V. mining-type unit; A 25 kW. Induction Heater, and a range of Industrial Motors.

The Power-House embraces a 4-cylinder naturally aspirated type "RK" Mark II Diesel engine capable of a full load output of 300 b.h.p. at 750 r.p.m. together with alternator and exciter. Special features embodied in the design of the "RK" Mark II range of engines include 4-valve cylinder heads, automatic shut down on failure of lubricating oil pressure, overspeed trip mechanism and universal bedplate suitable for industrial, rail traction or marine duties.

The exhibit of rectifiers comprises single anode mercury pool rectifiers or excitrons. Also a typical high voltage tube will be shown. Six tubes of this type will provide about 300 kW. at voltages up to 15,000 D.C.

The new 25 kW. High Frequency Induction Heater is robust and highly versatile for use in the production line. It uses a single air blast cooled oscillator valve made by the English Electric Valve Co., which eliminates the maintenance troubles inherent in water cooled valves. It is believed to be the most powerful H.F. Heater using a single air blast cooled oscillator valve.

Metropolitan-Vickers Electrical Co. Ltd.

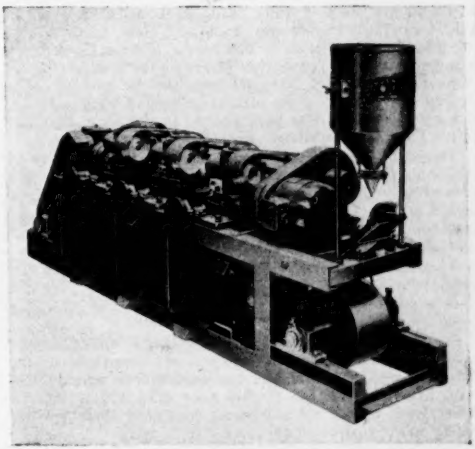
The display of Metropolitan-Vickers Electrical Co., Ltd. (Stand C.510, Castle Bromwich), includes the following exhibits: a high pressure steam turbine rotor; outdoor oil circuit-breaker; a steelworks auxiliary motor; a model of gas turbo-electric locomotive and velometers.

The Steelworks Auxiliary Motor consists of a 50 h.p. 500 r.p.m. totally-enclosed d.c. motor, type 10/51 MDX. The standards gaining world wide acceptance in the iron and steel industries are those of the American Association of Iron and Steel Engineers. Metrovick type MDX motors are designed to conform with the A.I.S.E. 600 series, now in common use in this country. The type MDX follows generally the tradition of Metrovick steelworks motors, but the new design embodies several marked improvements, *viz.*: more h.p. per frame, better commutation; lighter weight and shorter length; higher maximum safe speed; improved insulation; higher efficiency; and low armature inertia.

Rapid Magnetic Machines, Ltd.

Rapid Magnetic Machines Ltd., Birmingham 12, will again exhibit their wide range of products, the end use of which is either separation, transmission or magnetic transportation (Stand C. 421 Castle Bromwich).

This year's show will have a special emphasis on the company's entirely new range of permanent magnetic chutes and plate type separators. This equipment, incorporating Alnico or Alcomax permanent magnets, has been designed to meet the exacting requirements of several industries and of a wide variety of trades encountering tramp iron. Designed to give maximum magnetic strength coupled with simple installation, the separators are available for wet or dry processes. Three magnet strengths are obtainable to ensure the correct application, and working faces are available with either flush or stepped poles. The new Self Cleaning Drum Separator will also be shown, as will Electro and Permanent Magnetic Pulley type Separators.



The Rapid Type O.G. Separator, made by Rapid Magnetic Machines, for the selective separation of up to six closely related feebly magnetic minerals in one passing

The application of the Rapid "Magna Hump" and "Magna Trap" for inclusion in gravity, pneumatic or hydraulic ducts, pipe lines, etc., where liquid, semi-liquid or dry fibrous products are being conveyed, and tramp iron in any form is encountered, will be demonstrated.

Electro magnetic clutches and brakes for power transmission or arrestation; electro lifting magnets and feebly magnetic ore separators will also be included on the company's stand.

METALS, MINERALS AND ALLOYS

The U.S. steel crisis took a further sensational turn this week, when Federal District Judge Pine ruled illegal the administration's recent seizure of the steel industry in order to avert the threatened strike. This ruling was followed immediately by about 95 per cent of the country's steel workers coming out on strike.

The Administration then petitioned for an immediate stay of the ruling and as matters now stand the Government has been given until Friday afternoon to appeal to the Supreme Court. In his ruling Mr. Pine said that President Truman's seizure of the steel industry was "unauthorized by law." Rejecting the Government's contention that the President had inherent powers under the Constitution to take action necessary to avert an emergency Mr. Pine said: "I believe that the contemplated strike, if it came with all its awful results, would be less injurious to the public than the injury which would flow from a timorous judicial recognition that there is some basis for this claim to unlimited and unrestrained executive power which would be implicit in the failure to grant the injunction. Such recognition would undermine public confidence in the very edifice of Government as it is known under the constitution."

Earlier this week the International Materials Conference published its first annual report, the outstanding features of which are reported this week elsewhere under Notes and Comments.

The weakening of the world's lead and zinc prices continues unabated. The uncertainty regarding the U.S. steel situation and the Chilean copper strike have no doubt been depressing factors apart from the general supply and demand situation.

COPPER.—For some time the Chileans have been trying to persuade the U.S. to buy at a fixed price the 20 per cent of the copper output not allocated under the I.M.C. plan. The reason for this endeavour is now perfectly clear, though the revelation is not entirely surprising. Mr. Maschke, president of the Central Bank of Chile, has said that not a single ton of this unallocated copper has been sold since January. Part of this absence of sales is due to the Chilean Government standing out for its own price. Doubtless the president of the National Council for Foreign Trade will be told when he flies to Washington that the situation in which Chile is placed is due not to a total lack of buyers but to an absence of flexibility in her Government's attitude to a changing market.

Twelve thousand copper miners are on strike at three of Anaconda Copper's properties in Chile. Negotiations are proceeding to end the strike. The miners are reported to have agreed to arbitration by the President. They are reported to be demanding wage increases of 80 per cent against the 25 per cent offered by Anaconda.

A wildcat strike has closed American Smeltings' large copper refinery at Garfield, Utah. About 1,280 men are involved, over a grievance following the suspension of nine men. The plant normally produces 24,000 tons per month.

For the third consecutive month, stocks of refined copper held by producers, custom smelters and consumers in the U.S. declined. At the end of last year, stocks were 351,930 tons; by the end of March they were 313,355 tons. At this lower level, stocks are still equal to almost three months' supply at the current consumption rate.

Speaking at this week's annual meeting of international nickel, the chairman, Dr. Thompson, pointed out that some 300,000 tons are planned to be added to world production over the next few years, with further increases to come thereafter. "Many trade authorities," he said, "have already voiced the feeling that world copper production is heading for a

LEAD.—The decline in the price of lead on the Continental free markets is at last having its effect on the U.S. domestic quotation which is now at or below 18c. a lb. Recently foreign lead buyers have practically disappeared from the F.A.S. Gulf Market and Mexican lead producers have consequently been offering their surplus in the States. Ministry of Materials has also cut the price of lead this week by £8 to £155 a ton which is still about £20 above the Continental price. Lead ores are relatively even lower and points to market expectations that the lead price will decline further.

TIN.—There is still no news of an agreement between the Bolivian producers and R.F.C. despite the hopes held out earlier by the administrator of R.F.C. that negotiations would restart at an early date and that agreements would be quickly reached.

There appears to be some difference of opinion between the new Bolivian ministers. The Minister of Mines wants nationalization of the mines carried out quickly, so that the big mining interests could not send away their staff and indulge in other acts, described as sabotage. The Foreign Minister is reported to consider that nationalization cannot take place for some months. This Minister apparently thinks that nationalization would need Congressional approval and Congress, yet to be elected, will not meet until next year.

ZINC.—The wide disparity between the official U.K. price for zinc (£190 per ton) and the Continental price of £155 still persists and the free market clearly expects the price to go lower. Very little business is being done.

American trade sources are looking for the May allocations of zinc to be the last. When sending out particulars of the May allocations, N.P.A. refrained from detailing the quantities of various grades which could be bought. This freedom to switch from grade to grade within the limits of quantity allocation is interpreted as a half-way measure towards the greater freedom.

Once again Mr. Charles Ince, vice-president of St. Joseph Lead, has forecast that there will be sufficient zinc for any foreseeable requirements. His estimate of the position, which incidentally conflicts violently with the U.S. Government prediction is that consumption in the U.S. during 1952 will reach 889,000 tons and that 1,018,000 tons of slab zinc will be available. The difference of 129,000 tons will cushion any underestimates and interruptions in production.

ALUMINIUM.—The battle between the leaders of the aluminium and copper industries continues. Recently the protagonists were Mr. Nathaniel V. Davis, president of Aluminium Ltd. and Mr. C. R. Cox, president of Kennecott Copper. Mr. Davis told shareholders at the annual meeting that the aluminium industry had reached the stage when it can expect to compete during the coming years with most of the common non-ferrous metals. Mr. Cox, on the other hand, was unable to see that there was any immediate danger of aluminium replacing copper. The operative word in that statement appears to be "immediate." There is also the implication that though pure copper need not fear competition, alloy users might, for he warned the brass industry that it should learn to roll aluminium. To this degree, Mr. Cox obviously believes that aluminium might be able to successfully displace the copper used in the making of brass.

ANTIMONY.—The U.K. price of antimony was reduced at the beginning of the week. English regulus, delivered 99.6 p.c. is now £317 10s. instead of the former £352 10s. The U.S. price has also dropped. National Lead is now quoted 44c. per lb., in bulk, f.o.b. Laredo. This alteration is 6c. per lb. beneath the ceiling price.

NICKEL.—In his address to shareholders at yesterday's 50th Annual Meeting of International Nickel, reported elsewhere in this issue, Dr. Thompson made some interesting observations on the nickel market, pointing out that when current expansion programmes were completed total annual nickel production in the free world would be in the neighbourhood of 375,000,000 lb.—more than 65 per cent above pre-war output—he went on to warn that sooner or later there would be a recession in general business which would affect the nickel trade. "I have full confidence," he said, "supported by the experience of the

past, that the nickel industry is capable of emerging from it stronger than ever with new, important peace-time applications. But this will not happen by itself. This company must continue to search out, win and hold markets for nickel in all parts of the world. I trust that other producers and those newly coming into the field will feel, as we have, that production carries with it the responsibility for developing and expanding the market for nickel."

Although the re-establishment of normal industrial uses which had been temporarily restricted or suspended would require a major sales and development effort he felt confident that most of the older uses could be re-established or more than replaced by new ones.

QUICKSILVER.—Another $2 has been chipped off the price of a flask of quicksilver. The latest New York quotation is $200-202.

PLATINUM.—A domestic ceiling price of $93 per oz. has been set in the U.S. by the Office of Price Stabilization. This maximum price applies to commercial pure platinum and platinum products except platinum jewellery. The office has given a period of grace up to July 27, 1952, for sellers to deliver platinum up to a price of $105 per oz. This temporary modification was to encourage the sale of hoarded stocks and to allow for the disposal of stocks required at high prices. The purpose of the new regulation is to remove much of the speculative trading and hoarding, to encourage liquidation of investment stocks, and to pave the way for domestic sellers to get additional supplies.

As a result of this change, the price of platinum is now quoted in New York at $90-105 per oz., against $90-93. Baker and Co., a leading dealer in platinum, has announced however, that no change in the settling price of platinum will be made.

Iron and Steel

The shortage of steel continues to impede industrial expansion in many directions and the Government has made it plain that so long as supplies are scarce, the allocation system will be operated as a means to concentrate production for export and re-armament at the expense of capital investment and home consumption. It may be that the position will become easier as shipments of steel from U.S.A. are accelerated, but the most effective remedy is to increase the output of home steel.

It was stated by one of the steel chiefs at the week-end that raw material supplies for the furnaces—and not equipment—are at present limiting production.

But in this respect some improvement has recently been possible. Iron ore import figures for the first quarter of 1952 issued by the British Iron & Steel Corporation show that 2,139,000 tons were received, an increase of 428,000 tons over the corresponding period of last year. Since home ore production is also rising, blast furnacemen have been able to replenish their ore stocks and, moreover, the ore freight market continues to move in charterers favour.

The fuel situation, though still difficult, is improving and blast furnacemen are hopeful of achieving an increase of a 1,000,000 tons in the output of pig iron this year. All this extra tonnage could be absorbed by the steel plants as compensation for the shrinkage in scrap supplies, but the foundries are also in desperate need of increased supplies of pig iron, and their needs cannot be wholly neglected. High phosphorous iron is not so scarce as the special grades used in the production of engineering castings. Demand for haematite, low and medium phophorous, and refined irons is consistently in excess of the tonnages available.

Shipments of finished steel to the Dominions have recently fallen off owing to the new import restrictions, but the need for steel in Australia and New Zealand is far in excess of their own capacity and it is confidently expected that the present impediments to trade will be speedily removed. In the meantime, there are abundant outlets for exports of British steel, which is still the cheapest in the world. For steel sheets in particular there is a limitless demand, but the bulk of the output of the sheet mills is required for re-armament and only a tithe of the export business on offer can be accepted.

The London Metal Market

(From Our Metal Exchange Correspondent)

Apart from slightly increased activity at the end of last week the tin market on the London Metal Exchange has remained steady with turnovers below normal. A slight increase in the Eastern price on Tuesday was not followed in London and prices swiftly regained their former level. Consumers both in the U.K. and on the Continent are still restricting their buying to a minimum, and with no news about a possible new ore contract between the U.S. and Bolivia, there appears to be little to cause any violent movement in price in the near future.

The only other event of the week has been the reduction in America of the E. & M.J. quotation for lead to 18c. per lb., and it is worthwhile noting that should the average quotation for the month of May be below this figure, the import duty of 1 1/16c. per lb. will become operative again on the 1st of June. The sterling price of lead on the Continent appears to be around the £135 per ton mark.

There is only small activity on the copper market with prices unchanged while the zinc market can only be described as "dead.'

On Thursday the official close on the tin market was: Settlement price £964 10s., Cash Buyers £964 5s., Sellers £964 15s.; Three months Buyers £965 5s., Sellers £965 15s. In the afternoon the market was steady. Turnover for the day was 75 tons. Approximate turnover for the week was 410 tons.

The Eastern price on Thursday morning was equivalent to £972 15s. per ton c.i.f. Europe.

MAY 2 PRICES

COPPER

Electrolytic	£231 0 0 d/d

TIN

(See our London Metal Exchange report for Thursday's prices)

LEAD

Soft foreign, duty paid	£155 0 0 d/d
Soft empire, including secondary lead ...	£155 0 0 d/d
English lead	£156 10 0 d/d

ZINC

G.O.B. spelter, foreign, duty paid ...	£190 0 0 d/d
G.O.B. spelter, domestic...	£190 0 0 d/d
Electrolytic and refined zinc	£194 0 0 d/d

ANTIMONY

English (99%) delivered, 10 cwt. and over	£305 per ton
Crude (70%)	£260 per ton
Ore (60% basis)	37s. 6d./40s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade)	£454 per ton

OTHER METALS

Aluminium, £154 per ton.	Palladium, £8 10s. oz.
Bismuth, 25s. lb.	Platinum (scrap), £33.
Cadmium, 18s. 3d. lb.	Platinum, £27/33 5s. nom.
Chromium, 6s. 5d. lb.	Rhodium, £45 oz.
Cobalt, 20s. lb.	Ruthenium, £30 oz.
Gold, 248s. f.oz.	Quicksilver, £73/£73. 10s. ex-warehouse.
Iridium, £65 oz. nom.	Selenium, 25s. nom. per lb.
Magnesium, 2s. 10½d. lb.	Silver (bar), 77d. f.oz. spot and forward.
Osmiridium, £35 oz. nom.	Tellurium, 19s. lb.
Osmium, £70 oz. nom.	

ORES, ALLOYS, ETC.

Bismuth	50% 10s. lb. c.i.f.
	40% 9s. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£13 per ton c.i.f.
" " (concentrates)	£13 per ton c.i.f.
" " Refractory	£12 12s. per ton c.i.f.
Baluchistan Metallurgical ...	£14 16s. per ton c.i.f.
Magnesite, ground calcined ...	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis) ...	103s. 1½d. per unit c.i.f.
Wolfram (65%), U.K. ...	485s. nom. c.i.f.
Tungsten Metal Powder (for steel manufacture) ...	35s. nom. per lb. (home)
Ferro-tungsten	33s. nom. per lb. (home)
Carbide, 4-cwt. lots	£30 3s. 9d. d/d per ton
Ferro-manganese, home ...	£43 15s. 2d. per ton
Brass Wire	2s. 8½d. per lb. basis.
Brass Tubes, solid drawn ...	2s. 1½d. per lb. basis.

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The issue of British Electricity 4½ per cent stock 1974/79 announced last week turned out to be only a technical success. Allotment in full was made to applicants up to £100,000 and government departments have clearly been forced to take up a considerable proportion of the stock. This went to a discount of ¼ shortly after dealings opened. This is likely to cause a drag on any recovery in the gilt-edged market for some time as presumably the stock will have to be peddled out as and when opportunity may occur.

Mining shares generally had a dull and lifeless week. In the O.F.S., the pull of politics outweighed good results. The promising President Brand borehole of 3,253 in.-dwt. was followed by excellent reef intersection on No. 2 shaft at President Steyn. Sampling of the reef averaged 966 in.-dwt., being 71½ dwt. over 13½ in. The shares of both undertakings improved.

Kaffirs showed occasional improvement, but the general trend was downwards. Communications from Johannesburg indicate that the political crisis is taken more seriously in London than in the Cape. The quarterly results from Central Mining, General Mining, and Consolidated Goldfields, show that the expected decline in premium sale income for the March quarter has not occurred but in fact has risen. This caused some surprise. Blyvoors results were the best for some time. Crown Mines profits confirmed recent monthly returns, the March quarter profit being only £90,979 against £185,615 for December. Premium sales, however, were up by about £2,000. The shares fell heavily to their lowest level for a long time. West Driefontein again returned 100 per cent payability in its new developments as well as considerably higher reef values. Since production started on February 1, the mine has made a profit of rather more than £26,000, including premium revenues. The erection of uranium production plant on the property is to be deferred, as it is thought that a new mine like West Driefontein would not have sufficient slimes in hand to take full advantage of such costly equipment. The machinery will presumably be diverted to Daggafontein and Western Reefs.

Copper shares were an uncertain market and mostly closed easier. Exceptionally, Tanks came into demand upon the better Benguela railway receipts and optimism regarding the forthcoming Union Minière dividend. Rio Tinto also rose, at one time to 24½ cum dividend.

West African gold shares were listless. The announcement that companies can now sell 100 per cent of their gold output in the free market was well received, but the recent fall in the premium price of gold will have outweighed much of the benefit. At the Konongo meeting, Mr. Robert Annan disclosed that further rich ore has been exposed on the 9th and 10th levels of Boabedroo section. Figures were 380 ft. averaging 23.7 dwt. over 58 in. and 470 ft. averaging 18.1 dwt. over 130 in. The Ashanti reports records satisfactory progress and that certain technical production difficulties are being overcome. Ore from some of the subsidiary mines is now being developed. Taxation is the company's main bugbear and E.P.L. is likely to create yet another burden.

Consolidated Murchison were shaky following the news of the reduction of the price of antimony by £35 a ton. The report is due very shortly. The price of the shares currently stands around 57s., giving the extraordinary yield of over 70 per cent on last year's distribution. The market clearly thinks that this will not be maintained.

Lead/zinc shares were mostly easier with the exception of Broken Hill South and Consolidated Zinc. The former improved on the better dividend, the latter were firmer on some small inquiry at the lowest level. San Francisco Mines produced record figures in their report. The technical position of the mine appears very sound but the recent cut in the price of lead in the U.S. and U.K., the fourth since the middle of 1951, must make the outlook uncertain for the whole of this section during the coming year.

FINANCE	Price Apr. 30	+ or − on week
African & European	2⅜	−⅛
Anglo American Corpn.	6 ⅛ xd	−⅛
Anglo-French	18/6	−6d
Anglo Transvaal Consol.	28/9	1/3
Camp Bird	11/-	−6d
Central Mining (£1 shrs.)	33/9	−1/3
Consolidated Goldfields	46/3	−1/3
Consol. Mines Selection	26/10½	
East Rand Consols	3/-	−1½d
General Mining	4½	−⅛
H.E. Prop	31/3	−1/3
Henderson's Transvaal	11/3	−6d
Johnnies	3½	−⅛
Rand Mines	4⅜	−⅛
Rand Selection	37/6	−7½d
Union Corporation	8½	−⅛
Vereeniging Estates	4½	
Wits	28/1½	−1/4½
West Wits	41/3	−2/6
RAND GOLD		
Blyvoors	38/3	−2/3
Brakpan	17/6	−6d
City Deep	34/4½	−1/10½
Consol. Main Reef	32/6	−2/6
Crown	48/1½	−4/4½
Daggas	2⅜	−⅛
Dominion Reefs	1/10½	
Doornfontein	22/-	−1/7½
Durban Deep	3⅜	−⅛
E. Daggas	20/-	−7½d
E. Geduld (4/- units)	41/3	−7½d
E. Rand Props	3½	−⅛
Geduld	6½	
Grootvlei	31/10½	
Libanon	12/6	−1/-
Luipaards Vlei	18/-	−6d
Marievale	19/6	−1/-
Modderfontein B.	5/4½	−1½d
Modderfontein East	28/9	−1/3
New Kleinfontein	28/9	−7½d
New Pioneer	11/6	−1/9
Randfontein	17/3	−2/3
Robinson Deep	11/9	−9d
Rose Deep	27/6	−1/3
Simmer & Jack	6/-	−1½d
Springs	7/7½	−4½d
Sub Nigel	2⅜	−⅛
Van Dyk	10/3	−1/3
Venterspost	20/-	−6d
Vlakfontein	17/-	−6d
Vogelstruisbult	24/6	−9d
West Driefontein	5⅜	−⅜
W. Rand Consolidated	45/7½	−1/3
Western Reefs	38/1½	−1/3
O.F.S		
Alpha F.S.A.	6/3	
Blinkpoort	15/7½	−1/3
Central Mining F.S.	3/-	−6d
Freddies	6/3	1/-
Freddies N.	5/6	−9d
Freddies S.	7/-	−1/-
F.S. Geduld	2½	−⅛
Geoffries	16/3	−1/3
Harmony	17/4½	−1½d
Lydenburg Estates	8/9	−7½d
Middle Wits	14/6	−1/7d
Ofsits	38/3	−1/10½
President Brand	14/10½	+10½d
President Steyn	14/3	+3d
St. Helena	16/9	−3d
U.F.S.C. & G.	6/-	−3d
Virginia Deb.	73	
Virginia Ord.	9/1½	−7½d
Welkom	28/3	−2/6
Western Holdings (New)	2⅜	−⅛
WEST AFRICAN GOLD		
Amalgamated Banket	1/6	
Ariston	5/7½ xd	−1½d
Ashanti	19/3	−1½d
Bibiani	7/-	
Bremang	2/6	−1½d
G.C. Main Reef	3/3	
G.C. Selection Trust	6/3	+1½d
Konongo	2/6 xd	−1½d
Kwahu	3/10½	−1½d
London & African Mng.	1/6	
Lyndhurst Deep	1/1½ xd	
Marlu	1/6	
Nanwa	5d	
Taquah & Abosso	4/1½	
AUSTRALIAN GOLD		
Boulder Perseverance	2/4½	+1½d
Gold Mines of Kalgoorlie	10/-	+3d
Great Boulder Prop.	5/9	+6d
Great Western Consol.	6/10½	
Lake View and Star	16/- xd	−1/-
Mount Morgan	16/3	+6d
North Kalgurli	13/-	
Paringa	6d	
Sons of Gwalia	9/9	−3d
South Kalgurli	8/4½	
Western Mining	7/6	+1½d
Wiluna	5/7½	
MISCELLANEOUS GOLD		
Cam and Motor	38/9	+7½d
Champion Reef	7/-	−3d
Falcon Mines	7/9	−6d
Gl e & Phoenix	25/-	−6d
MISCELLANEOUS GOLD (contd.)		
G.F. Rhodesian	6/3	
London & Rhodesian	4/9	−3d
Motapa	1/7½	−4½d
Mysore	4/3	−3d
New Guinea	1/3	−1½d
Nundydroog	5/6	
Ooregum	2/9	
Oroville	11/- xd	
St. John d'El Rey	30/-	
Zams	38/3	+3d
DIAMONDS		
Anglo American Inv.	4⅜	−⅛
Casts	34/-	+3d
Cons. Diam. of S.W.A.	4	
De Beers Defd. Bearer	64/6	+6d
De Beers Pfd. Bearer	14⅜	
COPPER		
Chartered	56/3 xd	−2/6
Indian Copper	3/7½	−1½d
Mesaina	3⅜	+⅛
Nchanga	6⅜	+⅛
Rhod. Anglo-American	55/3 xd	+9d
Rhodesian Selection	15/9	−10½d
Rhokana	19⅜ xd	+⅛
Rio Tinto	21½ xd	−2
Roan Antelope	12/-	
Selection Trust	38/9	−1/3
Taaks	58/10½	+2/1½
Tharsis Sulphur Br.	45/-	−1/3
TIN (Eastern)		
Anglo-Burma	2/9	
Ayer Hitam	25/6	
Bangrin	9/4½	−1½d
Gopeng	12/1½	−1½d
Hongkong	8/3	−3d
Ipoh	23/-	
Kamunting	12/3	+4½d
Kepong Dredging	7/7½	
Kinta Tin Mines	14/9	+3d
Kramat Pulai	4/10½	
Malayan Dredging	23/6 xd	−3d
Pahang	15/1½	−4½d
Pengkalen	9/9	
Petaling	15/3	−1½d
Rambutan	12/6	
Siamese Tin	21/9	
Southern Kinta	15/3	+1½d
S. Malayan	24/9	
S. Tronoh	17/-	−6d
Sungei Kinta	18/1½	+7½d
Tekka Taiping	9/-	
Tronoh	24/9	−6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	9/1½	−1½d
Beralt Tin	23/6	
Bisichi	3/6	−1½d
British Tin Inv.	18/9	−3d
Ex-Lands Nigeria	5/1½	
Geevor Tin	12/4½	+3d
Gold & Base Metal	3/7½	−1½d
Jantar Nigeria	5/3	−3d
Jos Tin Area	11/-	
Kaduna Prospectors	4/-	
Kaduna Syndicate	5/4½	
London Tin	5/7½	−1½d
Ribon Valley	1/-	
United Tin	2/6	
SILVER, LEAD, ZINC		
Broken Hill South	48/9	+1/3
Burma Mines (3/6 sh.)	2/1½	
Consol. Zinc	28/3	+9d
Lake George	16/3 xd	−1/3
Mount Isa	38/6	−6d
New Broken Hill	24/3	
North Broken Hill	59/3 xd	−3d
Rhodesian Broken Hill	15/7½	−10½d
San Francisco Mines	33/3 xd	−2/-
Trepca	3/6	
MISCELLANEOUS BASE METALS & COALS		
Amal. Collieries of S.A.	43/9	−2/6
Associated Manganese	41/-	+3d
Chinese Engineering	4/-	
C.P. Manganese	51/-	−2/9
Natal Navigation	3⅜	−⅛
Wankie	16/-	−6d
Witbank Colliery	2½	−⅛
CANADIAN MINES		
Dome	$34½	
Hudson Bay Mining	$97	+$½
International Nickel	$77½	−$½
Mining Corpn. of Canada	£5⅜	+£⅛
Noranda	$135	+$1
Quemont	£7⅛	−£⅛
OIL		
Anglo-Iranian	5⅜	−⅛
Apex	43/9	
Attock	23/9	+6d
Burmah	68/1½	+3/7½
Canadian Eagle Bearer	38/9	+1/3
Mexican Eagle	22/-	+3d
Shell	4⅜	−⅛
Trinidad Leasehold	30/6	
T.P.D.	29/4½ xd	−7½d
Ultramar	32/3	−1½d

COMPANY NEWS AND VIEWS

Randfontein's Interesting Report

The annual report of the Randfontein Estates—the big Central Rand producer of the "Johnnies" group—is always awaited with interest. That for 1951 contains, in addition to figures of milling operations and development, a schedule of the property held and the announcement that the mine (which generates its own electricity) has linked up with the Electricity Supply Commission and is supplying it with surplus electric power.

Operations last year resulted in a lower profit, for although premium sales brought in more and gold recovery was higher, a lower tonnage was dealt with. This amounted to 4,097,000 tons—a decrease of 95,000 tons on the figure for 1950. Yield per ton of 2.419 dwt. went against 2.339 dwt. and the recovery of 495,593 oz. showed an increase of 5,327. The benefit derived from this additional gold was, however, absorbed in working costs which rose from 25s. 6d. to 27s. 11d. per ton and the total working profit, excluding £295,867 (against £90,024) received in respect of premium gold sales, was £463,180 compared with £766,006 in 1950. The dividend was reduced from 3s. to 2s. 3d. and absorbed £457,149. Taxation called for a larger amount £184,136 (£168,449).

Development footage of 104,188 ft. was 13,123 ft. less, and of the 47,565 ft. sampled, 32.27 (30.14) per cent proved payable, averaging 5.9 dwt. (6.4 dwt). The drop of 1,460,000 tons in ore reserves has brought these down to the figure of 4,090,000 tons of 3.0 dwt.

Deepening of the North-East shaft, which was decided on following development work and diamond drilling, has been completed and stoping operations in this area commenced. The borehole on Gemsbokfontein, started in 1950, intersected the Leader Reef at 3,624 ft., assaying 28.7 dwt.

Government Areas' Profit Drop

At one time in the '30's, Government Gold Mining Areas had the proud distinction of being the largest gold mine in the world. It has been a prolific producer and paid handsome dividends, but the heyday of its career has long passed and developments are now confined to reclamation work. How long it will carry on it is not possible to say. At the last annual meeting the chairman stated that the life depended to a very large degree on matters over which they had no control—gold price, the unit cost factor, etc.

Ore milled last year was 2,766,000 tons or 93,000 less than in 1950. Yield was slightly lower at 2.731 dwt. per ton and working costs of 29s. 11d. went against 28s. 9d. Profit, excluding £229,831 received in respect of gold sold at enhanced price, amounted to £639,414 against £906,398 in 1950, when gold premium sales accounted for an additional £71,577. Dividends paid amounted to 2s. 1½d. against 2s. 4½d. and absorbed £595,000. Government share of profit was £193,737.

Development footage was 22,994 ft. less than in 1950 and amounted to 53,047 ft. Of this 44,400 ft. were sampled giving a pay ratio of 56.41 per cent (against 48.81 per cent), value being 4.8 dwt. compared with 5.2 dwt. As in the previous year, some of the development was done on the Kimberley reef which gave a satisfactory pay percentage—43.45—and value of 5.8 dwt. Most of the development was carried out in limited and selected areas where it was considered that payability would be encountered. It is believed that the bulk of the pay shoot has been discovered and developed. Ore reserves at the end of 1951 were 7,801,000 tons (against 8,090,000 tons), their value being slightly lower at 2.9 dwt.

East Champ d'Or's Decreased Development

As the smallest mine on the Central Rand, the East Champ d'Or, has given a good account of itself since it was converted from a private into a public company some fifteen years ago. Like all mines it has felt the impact of higher working costs but fortunately it has been helped in meeting these by revenue received from gold sold above standard price.

Operations last year were on a somewhat reduced scale; less development was done, a lower tonnage was crushed and the profit was slightly less, though it did not compromise the dividend.

The mill dealt with 388,000 tons of ore—a decrease of 5,000 tons, but the gold recovery was better, being 3.011 dwt. against 2.878 dwt. There was an increase of 1s. 9d. per ton in costs to 30s. 10d., and the profit (excluding £35,200 received in respect of gold sales premium) amounted to £128,407 compared with £133,077. The dividend was maintained at 9d. per share. Taxation called for £67,689.

Development footage which the previous year was on a lower scale, was again substantially reduced and at 4,283 ft. compared with 8,894 ft. in 1950. This appears to be accounted for by the fact that of the 415,524 tons of rock mined during the year, 149,788 tons were taken from blocks included in ore reserves; hence less footage was accomplished and development expenditure lower. Ore reserves dropped by 109,000 tons to 377,000 of 3.5 dwt. The stoping of blocks on the Bird reef is in progress but results on this horizon have been disappointing and little further exploratory work will be carried out. The pay ratio of the 3,105 ft. sampled was 64.25 per cent and value 14.6 dwt.

New State Areas and Premium Gold

The annual report of New State Areas once again emphasizes the mine's dependence on the gold premium for its profitable operations.

Situated to the south of Government Areas, it never quite achieved the distinction of this older mine. Crushing commenced in 1923 and the first dividend was paid two years later. Distributions have since been regular although showing a gradual decline in recent years.

Tonnage crushed was 688,000—a decrease of 331,000 tons on that milled in 1950, while in addition, 568,400 tons of old slimes residues were treated. A total of 91,485 oz. of gold was produced. The recovery from current ore was equivalent to 2.350 dwt. against 2.239 dwt. previously. Costs increased sharply to 32s. 7d. against 28s. 7d., owing to the reduced rate of milling. Profit from operations was £22,725 (compared with £82,025 in 1950). Additionally an amount of £58,906 was received in respect of increased revenue from sales of gold at above standard price. The dividend of 1s. 3d. absorbed £94,628, or more than was made during the year's operations.

The footage of development was 7,199 ft., and of the 5,965 ft. sampled, 55.89 per cent was payable, averaging 10.6 dwt. The remaining blocks of payable ore underground are becoming rapidly exhausted and reserves have tapered to 205,000 tons of 4.3 dwt.

Wit. Gold's Operations

Operations continued to be carried on profitably by Witwatersrand Gold Mining during 1951. This company, registered in 1887, has well demonstrated the belief that old mines die hard. The property is situated on the Central Rand and in addition, the company owns certain freehold farms, townships and stands, from which it receives rentals and sundry revenue.

Although profit from mining operations was not so large last year, the mill dealt with 55,000 tons more at 708,000 tons. Recovery of 2.314 dwt. per ton was rather lower than previously but more gold was produced—81,925 oz. against 79,771 oz. in 1950. Working costs took a somewhat exceptional downward trend and at 28s. 5d. per ton were 8d. per ton less than in the previous year. Profit from operations amounted to £16,189 (against £42,679), while additionally sums totalling £49,142 were received in respect of increased revenue from sales of gold at higher than standard prices. A dividend of 1s. 6d. per share was paid absorbing £35,222, and a return of capital of 1s. 6d. per share decided on. It was paid to shareholders in March this year and reduced the original £1 shares to 17s. 6d. A first return of capital of 1s. per share was made in 1949.

Development last year amounted to 6,659 ft. and of the 5,170 ft. sampled, 36.4 per cent proved payable averaging 5.3 dwt. The extraction of the South Vertical shaft pillar and

the necessary work to re-commission the South Incline shaft has proceeded satisfactorily. Ore reserves have come down to 122,000 tons, their value being 2.7 dwt.

Free State Geduld Drilling and Shaft Sinking

Simultaneously with shaft sinking and surface layout, Free State Geduld has continued with drilling operations. These have provided further technical information, and from this it appears likely that, in due course, some additional tonnage of ore may become available from the reefs in the upper series.

Shaft sinking during 1951 was interrupted by frequent intersections of water-bearing fissures. At the end of March of this year, No. 1 shaft had reached a depth of 4,566 ft., which is about 300 ft. above the expected horizon of the Basal Reef, and No. 2 shaft, which was 5,174 ft. deep, had about 280 ft. to go to the Reef. It is intended to sink both shafts to a final depth of 5,600 ft. before any major development will be undertaken from them. It is from the drive north on Western Holdings property into the Free State Geduld mine that underground development of the southern area will apparently first be made. It will be in the neighbourhood of borehole No. 2 on the farm Geduld 197 and will ultimately connect with the No. 2 shaft of Free State Geduld. The first results of this, the chairman says in his statement accompanying the report, will be available before the end of the year.

Meantime progress is being made with surface work and buildings. Compressor houses have been completed at both shafts, headgear erected and hoists installed together with other equipment. Reasonable progress is reported on all sections of the reduction plant.

There has been no change in the company's capital which remains at £2,000,000. The balance sheet shows that £4,348,619 has been spent on shaft sinking and equipment. Loans with cash figure at £391,576.

Welkom's Plant Extension Project

The first report of Welkom Gold Mining as a production mine is that just issued for 1951. The reduction plant was officially opened in November last and operations since have not given anything like a true indication of the mine's possibilities. Losses have so far been made but, as the chairman forecasts in his statement accompanying the annual report the mine will be returning a monthly working profit by the middle of the year. The policy adopted of starting milling before a large ore reserve had been established was only possible because of evidence supplied by the comprehensive surface drilling programme and confirmed by developments.

The reduction plant was purchased from Springs Mines where it treated 69,000 tons a month and metallurgical tests indicate that it will have a similar capacity at Welkom. If it is extended by a unit with a nominal capacity of 25,000 tons a month, a monthly tonnage of almost 100,000 tons can be treated. It was therefore decided to extend the underground development programme so that an ore reserve sufficient for a milling rate of this figure would be built up. From start of development until end of March, 1952, 112,659 ft. of development had been accomplished, of which 28,493 ft. were on Basal reef. Of the 28,080 ft. sampled, 60.63 per cent proved payable averaging 361 in.-dwt. The "B" reef also gave good results.

The finances of the company have already been assisted materially by revenue from gold production which up to the end of March had brought in £280,750, of which £202,615 was earned during the period January to March, 1952. To further augment resources the company has disposed of some President Steyn and President Brand units and thereby raised £350,000. It is expected that the money will be sufficient to bring the mine to the profit-earning stage.

During the year a company known as Inter-Mine Services O.F.S. was formed to provide and administer certain centralized services for the mines of the Anglo American group and thus avoid unnecessary duplication of stores, etc. Finances are provided by the various O.F.S. companies belonging to Anglo American.

Western Holdings Early Start of Crushing

The principal asset of Western Holdings is its mining property in the Orange Free State, which is in the course of being developed. In addition it has investments standing in the balance sheet at £310,545. It also holds rights over an area south of the Vaal Reefs property on which drilling has given some encouraging values.

The annual report for 1951 confirms the intersection of the Basal reef in both shafts with satisfactory results. Development work has started. It has included drives to the reef on four levels in each shaft and at the end of March of this year the footage accomplished was 344 ft. of which 126 ft. were on reef. Of the footage sampled, 95.83 per cent proved payable averaging 149.64 dwt. over 4.0 in. In his statement accompanying the report the chairman states that it is important that the connection between the two shafts be completed as soon as possible as stoping operations cannot start until the mine has two connected exists.

Ore from development work will be available for the reduction plant which will have a capacity of 75,000 tons a month. This is expected to be run in and the metallurgical tests carried out soon after the middle of the current year. Some time must, however, elapse after the start before the tonnage available from stoping will be sufficient to give a true reflection of the grade and allow revenue to exceed expenditure. The profit-earning stage should, however, not be long delayed.

Since the close of the financial year the company's capital has been increased from £1,500,000 to £1,875,000 and in January shareholders were offered the right to subscribe for new shares as also for an issue of 5 per cent Registered Unsecured Notes, convertible into ordinary shares at 66s. 8d. per share.

President Brand's Projected Sub-Vertical

Good progress was made at President Brand during 1951 although operations are not so advanced as at the neighbouring President Steyn. Two shafts being sunk have been subject to delay by the intersection of water-bearing fissures but at the end of March of this year, No. 1 shaft had reached a depth of 3,946 ft. This is about 500 ft. above the estimated level of the Basal reef and when this is reached, work will be started on a haulage to connect with No. 2 shaft which is now down to 2,999 ft. It is proposed to stop this at 5,250 ft. and to proceed with the drive northwards to connect wih No. 1 shaft. In order to carry out development from this shaft it will be necessary to crosscut in country rock to the Basal reef and instead of continuing the shaft so as to have access to the Basal reef in the southern portion of the mine, consideration is being given to the possibility of sinking a sub-vertical shaft from this horizon.

Work has gone forward in connection with surface buildings, winder house, store, explosives magazines, etc. Permanent steel headgear has been erected at both shafts together with compressor house and Ward Leonard winders, while in addition housing accommodation has been erected as also native hostel. The laying of inter-shaft road has been started since the end of the year.

An offer of 2,500,000 reserve shares was made to shareholders at £1 per share last year and as a result the issued capital of the company was increased to £1,875,000. It is now intended to increase the authorized capital from £2,000,000 to £3,000,000, but it is not the intention of the Directors to issue the shares immediately. The balance sheet shows the company to have loans and cash of £962,164.

President Steyn's Underground Work

The intersection last October of the Basal reef in President Steyn's No. 1 shaft at 4,152 ft. is confirmed in the 1951 annual report, while this week comes news of the intersection of the reef in the No. 2 shaft at 4,963 ft. Round the perimeter of the latter shaft the reef averaged the exceptionally good value of 966 in.-dwt. The No. 1 shaft which is to be sunk to 5,250 ft., was temporarily stopped at 4,450 ft., so that an early start could be made on the main connecting haulage with No. 2 shaft. It is essential that this should be made as soon as possible so that stopes can be started.

Underground reef development was commenced early this year and by the end of March 426 ft. had been driven, of which 26 ft. were on reef, 60 per cent of the 25 ft. sampled being payable of an average value of 38.3 dwt. It is proposed to develop on four levels but it will be some time before the

necessary cross-cutting in country rock is completed on all levels.

The erection of the reduction plant is well advanced and it will be possible to run the plant for metallurgical tests using rock from development before any tonnage is available from stoping. Every effort will be made to carry out the rapid underground development and it is hoped that production on a limited scale will start early in 1953 and that monthy profits will be earned from about the middle of 1953.

The company's balance sheet shows the effect of the 2,500,000 shares of 5s. each issued during the year, bringing the issued capital to £1,875,000. In addition the company has issued 2,500,000 registered options, entitling holders to subscribe for Registered Notes convertible into shares. At the annual meeting the capital is being increased to £3,000,000 but it is not the intention to issue any new shares immediately.

Progress of Freddies North

In its present stage of shaft sinking and surface work, the accounts of Freddies North Lease Area can have little interest other than as a record of capital expenditure. Those for 1951 show that the issued capital was increased during the year by the conversion of 51,513 10s. units of 5 per cent Registered Unsecured Convertible Loan stock 1953/60, which has brought it up to £5,017,594 10s. in shares of 10s. each. The item for shafts, plants and machinery stands in the balance sheet at £3,798,768 and the Company has cash of £848,783.

Owing to the proximity of the mine to that of Freddies South, certain services are provided and are used for the mutual benefit of the two companies. Up to the end of last year, both were under control of one manager, but now that they are well advanced in surface work and underground, separate managers have been appointed.

Sinking proceeded at both shafts during 1951; No. 1 reached a depth of 5,767 ft. and No. 2, 5,091 ft. They have since been further deepened. The basal reef was intersected in No. 2 shaft at 5,014 ft. but owing to faulting it was not encountered in No. 1 in the north-west part of the lease area. The intersection of water-bearing fissures impeded progress and caused periodic interruptions. With the completion of the necessary stations, the task now is to connect up the two shafts which are about two miles apart.

A great deal of surface work has been done, houses and buildings erected together with native compounds, while a 250-drill compressor has been brought into commission to serve both this Company and Freddies South. General construction seems to have gone well ahead and work has proceeded satisfactorily on the erection of the Reduction Plant, which will be capable of milling at rate of 50,000 tons per month.

Opening Up of Freddies South

The similarity of work being undertaken at Freddies South with that of its northern neighbour makes it somewhat difficult to judge which is making the more rapid progress. Up to the close of last year both mines were under the control of one manager, but separate managers have now been appointed to the respective properties.

The two shafts being sunk on Freddies South are large five-compartment shafts, similar to those of Freddies North. No. 1 reached a depth at the end of last year of 4,974 ft. and No. 2, 5,392 ft. The Basal reef was intersected on the north side of No. 1 shaft at 4,790 ft. below the collar and a full exposure of the reef over the perimeter was completed at a depth of 4,805 ft. Sampling of the reef at 5 ft. intervals around the perimeter gave an average value of 11.9 dwt. over 13.6 in., equivalent to 162 in.-dwt. The "A" reef was not encountered but the "B" reef was met with at 4,405 ft. with low value. Normal shaft sinking was continued with No. 2 shaft last year but was retarded by the necessity for frequent cementation and the carrying of much residual water. The upper level station was cut at 5,011 ft.

Surface work consisting of mine buildings, dwelling houses and native compound together with a hospital has gone well ahead. The erection of the Reduction Works with an estimated milling capacity of 50,000 tons per month, proceeded satisfactorily. Foundations and structures were completed and a start was made on the installation of the machinery and plant.

The Company's balance sheet shows the effect of the conversion of 64,201 units of 5 per cent Registered Unsecured Convertible Loan stock into 10s. shares, bringing the issued capital at the end of the year to £5,125,953. Shafts, plant and equipment stand at £3,948,404. Stores in hand £1,800,315 and cash, £834,136.

Company Shorts

Central Mining and Investment Corporation's Preliminary Results.—Group profits, before tax, of Central Mining and Investment Corporation, the important Rand finance house, for the year 1951 increased by £252,910 to £1,007,800. After providing £587,458 (£326,530) for taxation and £504 (£1,401) for minority interests, the balance of profit available to the corporation was lower at £419,838 compared with £426,959. Although the ordinary dividend at 2s. 4½d. per £1 share was maintained, the company reduced its total reserve appropriations. The sum of £100,000 against £50,000 was transferred to investment reserve and £36,672 against £6,485 was allocated to exploration reserve, but general reserve received nil compared with £100,000 last year. The preliminary announcement records the carry forward at the fiscal year end at £208,872, compared with £202,324 in the preceding year.

The directors state that dividend income, profits on realization of shares, interest earned and fee revenue, all contributed to the increase. Provision for the diminution in value of investments and general expenditure were reduced.

Rand Mines Earns Less but Maintains Dividend.—Dividend income of Rand Mines for 1951 declined by £148,546 to £976,537. But interest in exchange rose by £7,351 to £29,060 and sundry revenue was higher at £21,114 compared with £20,435 in 1950. Dividend payment, as previously announced, amounted to 7s. per 5s. share, the same as for 1950.

The report and accounts of Rand Mines will be dealt with at greater length in next week's issue.

Heavy Tax Burden Reduces Ashanti's Profit.—For the year ended September 30, 1951 Ashanti Goldfields Corporation increased its tonnage throughput by 18,967 tons to 237,637 tons, but the gold content per ton declined from 19 dwt. to 17.2 dwt. per ton, with the result that gold output at 188,339 oz. was 1,476 oz. less than that produced in the preceding year. Nevertheless, working profit was higher at £1,383,214 compared with £1,363,607. However, taxation liabilities, including royalty payments and Gold Coast Government Gold Duty, advanced from £729,046 to £950,912 thereby reducing net profit to £432,302 compared with £634,561 in the preceding year. The lower profits available affected the year's distribution which totalled 50 per cent against 62½ per cent. This required £1,062,524 against £1,146,057. After allocating £13,654 (£13,000) to the staff pension scheme and allocating £90,902 (£192,369) to reserves, the balance carried forward was £226,909 compared with £213,507 previously.

The full report and accounts will be dealt with in greater detail in next week's issue.

Bibiani Reduces Dividend.—Rising costs and heavy taxation liabilities were responsible for the reduction in the net profit and dividend distribution of Bibiani (1927) for the year ended September 30, 1951.

In spite of the greatest care and economy, the increased cost of essential mining stores together with the advance in development charges of 3½d. to 2s. 10½d. per ton, raised working costs by 2s. 11d. to 35s. 6d. per ton. Tax liabilities, due to the fact that the company had to pay £23,275 Gold Coast Government Gold Duty in respect of the previous year's profits, at £110,639 (£141,311) were higher than they would otherwise have been. Thus the net profit of £111,473 compared with £166,648. Accordingly, the dividend payment was reduced to 20-5/6 per cent against 25 per cent the previous year.

An amount of £47,810 (£90,497) was allocated to reserve and £8,975 (£7,401) was appropriated for the company's staff assurance scheme, leaving a balance to be carried forward of £181,669, a decrease of £2,189 compared with the previous year.

The full report and accounts will be dealt with at greater length in next week's issue.

Nigel Gold's Results.—Working profit of Nigel Gold Mining Co. for the year 1951 amounted to £36,165 compared with £75,195 in the preceding year. From the £181,015 (£222,968) available, £1,054 (£3,132) was transferred to reserve for terminal liability under the Silicosis Act, the sum of £17,861 was required to meet the dividend payment of 2½ per cent (12½ per cent) and £111 was used as a refund for forfeited dividends, leaving the carry forward at £161,989 against £127,462 brought in.

INTERNATIONAL NICKEL COMPANY OF CANADA

JUBILEE YEAR OUTSTANDING FOR EARNINGS AND DIVIDENDS

The Fiftieth Annual Meeting of the International Nickel Company of Canada Ltd. was held on April 30 at the Royal York Hotel, Toronto.

Dr. John F. Thompson, chairman and president, in the course of his address to shareholders said:—

This meeting marks an auspicious occasion in the history of our company. It is our fiftieth annual meeting since the formation of International Nickel.

Canada climbed to the acknowledged first place in the production of nickel in 1905—three years after the Canadian nickel-copper ores and the then best method for their separation into nickel and copper (the so-called Orford Process) were brought together in International Nickel. This position has been maintained since that time. In 1905 Canadian nickel production was at a rate of slightly over 1,500,000 lb. per month. To-day this company alone is producing 21,000,000 lb. per month and total Canadian production is over 23,000,000 lb. monthly.

The company's fiftieth year, 1951, was outstanding, with new high records for net earnings and dividends. Wages paid and capital expenditures reached new all-time highs, and income taxes, which registered much the sharpest increase of all, were larger than in any preceding year. The net earning o $62,875,000, or $4.17 a share on the Common, compared with the previous peak in 1937 of $50,299,000, or $3.31 per share. Production of nickel was further increased and more ore was mined from underground than in any previous year.

NICKEL

Although our production of nickel was increased, our deliveries of 243,800,000 lb. were some 12,500,000 lb. less than in 1950. In that year the company was able to draw on stocks of refined nickel accumulated from operations in 1949 when demand was slack and Governments were limiting their purchases for stockpile.

Deliveries.—Deliveries to the trade in 1951 in the form of primary nickel increased almost 8,000,000 lb. while nickel in our rolling mill and foundry products decreased over 20,000,000 lb. as our mills in England, Scotland and the United States progressively converted to defence production at the expense of peace-time alloys and certain end-uses of high nickel alloys were suspended or officially prohibited.

Costs and Price.—New union agreements were negotiated in May reducing the work week from 44 to 40 hours for all our hourly employees in Canada and increasing substantially their take-home pay. As a result of the shorter work week it was necessary to add to the number of employees required to conduct our operations. To compensate for the increases in costs which resulted from these union agreements and from higher costs of materials, supplies and other items, the price of nickel in all markets was raised 6 c. per lb. at mid-year, bringing our United States duty paid price of electrolytic nickel to 56½ c. per lb.

GAS TURBINES AND JET ENGINES

Nickel alloys were used in all jet and reciprocating aeroplane engines produced in 1951. Our plants and research organizations in Birmingham, England; Glasgow, Scotland; Bayonne, New Jersey; and Huntingdon, West Virginia, have been devoting much effort to meeting the demands of the builders of gas turbines and jet engines. Greater efficiency, measured in power output per lb. of engine, has required materials which will perform reliably at high temperatures under mechanical stress. Included in the materials developed by our company for these purposes are the Nimonic and Inconel groups of high nickel alloys, and other special purpose compositions.

ELECTRONICS

The greatly expanding electronics industry consumed significant quantities of nickel and nickel alloys during 1951. In this, as in other fields, nickel conservation was necessary, but by reason of the specialized properties required, other materials could not always be substituted with fully satisfactory results. As part of its contribution to conservation the company initiated production of nickel-clad steel strip and nickel-clad wire as temporary substitutes for solid nickel in this field.

The quantities of Nimonic supplied by our United Kingdom subsidiary, Henry Wiggin & Co. Ltd., from its plants in Birmingham and Glasgow were doubled. On the other hand, production of rolled anodes at the Wiggin plants was reduced approximately 50 per cent and the output of strip for nickel coinage was completely suspended.

COPPER DELIVERIES

Our deliveries of refined copper in 1951 of 236,900,000 lb. were 24,000,000 lb. greater than in 1950. Canadian consumers received 55 per cent of the total, the balance being marketed in the United Kingdom, the United States, and Continental Europe. By the latter half of the year buyers in all these markets were subject to Governmental allocations or import controls. During the fourth quarter the International Materials Conference began to make recommendations for the international allocations of copper.

PLATINUM METALS

Platinum, palladium, rhodium, ruthenium, and iridium, produced by the company as by-products in the refining of nickel and copper, continued in heavy demand throughout 1951.

Total deliveries of 375,000 oz. were 108,000 oz. more than in 1950.

The company's production of platinum was maintained at capacity and the entire output was sold. The bulk of our deliveries was made to the United States market.

OTHER BY-PRODUCTS

Beginning with the last quarter of the year the company's production of gold was sold abroad, pursuant to the new regulations of the Government at Ottawa permitting export sales of gold free of Governmental price control.

Cobalt concentrate, one of the by-products recovered in limited quantities from our nickel and copper production, is refined and produced in marketable form at our refinery in Clydach, Wales. The resultant products, consisting of salts and oxides, are distributed from the United Kingdom.

Other by-products recovered included silver, selenium, and tellurium.

PLANT OPERATIONS

Operations of the copper refinery at Copper Cliff were maintained at a higher rate than in 1950. Through changes in operating practice, the quantity of slag required to be returned to the smelter for further treatment was lowered considerably, resulting in substantial savings.

At the Port Colborne nickel refinery output of electrolytic nickel showed an increase over 1950. Losses in production were cut considerably due to fewer power interruptions. Plans have been completed for construction of a new research laboratory building at this refinery.

Our nickel refinery at Clydach, Wales, was operated at maximum capacity during the year, with nickel output the highest on record. There is a healthy and growing demand for carbonyl iron powder, one of the products of this plant.

At the company's precious metals refinery in Acton, England, production of platinum metals and gold from concentrates and intermediate products showed an increase. Operations are continuing at capacity and further improvements in plant facilities are under way.

Our wholly owned subsidiary, Birlec Ltd., of Birmingham, England, was started in 1927 under the name of Birmingham Electric Furnaces Ltd. In the 25 years since its formation Birlec Ltd. has gradually expanded until it now manufactures a line of electrically and gas-fired industrial furnaces especially designed for the heat treatment, annealing and other processing of metallic parts used in the manufacture of automobiles and other means of transportation, the heat treating of small pieces, such as drawn shells, and the enamelling of ceramics. This subsidiary is now also manufacturing a full line of arc melting and smelting furnaces, together with adsorption dryers, for gases.

CAPITAL EXPENDITURES

Capital expenditures in 1951 were the highest for any year in the company's history. They totalled $23,700,000, and compared with the previous high of $21,400,000 in 1929. The principal expenditures were $15,880,000 for our Canadian programme of major expansion in the mining and treating of underground ores plus $3,090,000 for the building of homes for our employees in the Sudbury district, required by our expansion programme.

It is estimated that capital expenditures for 1952 will exceed $20,000,000.

Distributions on the Common shares totalled $37,900,000, or $2.60 per share, and were larger than in any previous year. In each of the four preceding years dividends of $2.00 per share were paid. Four regular quarterly dividends of $1.75 per $100 of par value were paid on the Preferred shares.

Sooner or later we will see a recession in general business which will affect the nickel trade. I have full confidence—supported by the experience of the past—that the nickel industry is capable of emerging from this recession stronger than ever with new, important peace-time applications. But this will not happen by itself. This company must continue to search out, win and hold markets for nickel in all parts of the world. I trust that other producers and those newly coming into the field will feel, as we have, that production carries with it the responsibility for developing and expanding the market for nickel.

The report was adopted.

CAMP BIRD, LTD.

The Fiftieth Annual General Meeting of Camp Bird Ltd. was held at The Chartered Insurance Institute, 20, Aldermanbury, E.C.2, on Tuesday last.

Mr. F. C. Heley (Chairman) who presided, in the course of his speech said:—

Returning to the Accounts under review, it is with great satisfaction that in the face of so many complexities your Directors are able to report a successful year's work, the results of which, in summary, are as follows:—

The profit for the year amounted to £259,000, an increase of £62,000 over 1950. Of this sum £100,000 is required to meet taxation, £25,000 has been added to our general reserve, bringing the total sum to £200,000, £65,000 has been transferred to investment reserve, bringing the amount of that reserve to £81,500, after providing £49,500 for depreciation of certain of our investments, and leaving a balance, including that brought forward from last year—£49,000—of £118,000.

In considering the amount of the dividend to be recommended, we had before us the specific request of the Chancellor of the Exchequer. In view, however, of the fact that we are now holding our Fiftieth Annual General Meeting, your Directors felt that some special recognition should be made of the consistent support given by the Shareholders to the Board over the long term of years, and they therefore recommend that in addition to the usual dividend of 10 per cent., which has been maintained for six years past, there should be a Jubilee bonus of 2½ per cent., both subject to Income Tax.

You will have seen from the Profit and Loss Account that the gross amount of dividends received increased by £51,000, largely due to the Lake George and Fresnillo distributions. A comparison of the dividend income for the past three years discloses the following, viz.:—

1949	£43,800
1950	£108,000
1951	£159,000

During the next year or two other of our investments will be adding their quota, particularly the South African developers.

Our quoted investments, at book values, show a reduction of £138,000, but, on the other hand, our cash at Bankers has increased by £175,000, which indicates the temporary lack of opportunity for employing our resources in suitable directions, and the caution with which we regard the present outlook for investment. At 31st December, 1951, current assets (including over £290,000 in cash) exceeded current liabilities by £204,000.

In order to assure you that your assets are being fully maintained, I am able to state that on the 31st December, 1951, the "break-up value" based mainly on Stock Exchange prices was 22s. 9d. per share, as compared with 21s. 6d. per share a year earlier. Both these figures are before making provision for the dividends. I must repeat my warning that these figures are to be used merely for comparative purposes, as it would no doubt be impossible, particularly under existing conditions, to dispose of any large block of shares on the basis of the middle price of the Stock Exchange quotation.

The categories of our investments are substantially the same as I reported last year, namely, 66 per cent. Gold and Platinum Mining, 19 per cent. Silver and Base Metal Mining, and 15 per cent. Miscellaneous. Their geographical distribution is as follows:—

South Africa and Rhodesia ...	66 per cent
Australia	12 ,, ,,
America	11 ,, ,,
West Africa	1 ,, ,,
and elsewhere	10 ,, ,,

All these percentages are based upon book values.

With reference to the old Camp Bird Mine, you will have noticed an improvement from £13,000 to £19,000 in the income received from this source, constituting a 25-year record. Our Resident Superintendent expresses the opinion that if the exploitation of the mine continues to be carried on as effectively as it has been during the past few years the prospects for a further period of years are very good.

You will have recently seen announced that the Lake George Mining Corporation has again declared an interim dividend of 1s. 6d. per share, thus maintaining its interim dividend rate on the previous year's basis.

The West Driefontein Gold Mining Company, in which we have a substantial investment, continues to report 100 per cent. payability in its development. During the March quarter 2,000 feet were sampled disclosing an average value of 18.2 dwt. per ton over 45 inches, equivalent to 819-inch dwt. Towards the end of March a connection was successfully made on the 10th Level between Nos. 1 and 2 Shafts which should permit an accelerated programme of mining.

The Report and Accounts were adopted and the dividend confirmed. The retiring Director Mr. R. H. A. Neuschild was re-elected.

The proceedings closed with a vote of thanks to the Directors.

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KONONGO GOLD MINES

The Eighteenth Annual General Meeting of Konongo Gold Mines Ltd., was held on April 29 at the Chartered Insurance Institute, 20, Aldermanbury, London, E.C.

Mr. Robert Annan, M.I.M.M., chairman of the company, who presided, in the course of his speech, said:

The principal factors affecting the accounts are a decrease in tonnage but an increase in the grade of ore treated, an increase in the amount of development and an increase in the rate of gold duty payable. As a result the working profit at £171,259 is £21,281 less than in the previous year.

Deducting £15,272 provided for depreciation and £104,000 for taxation, the balance available from the year's profit is £51,987.

The total tonnage treated in the mill at 59,140 tons is 25,686 tons less than in the previous year. Of this amount 36,750 tons, yielding 32,346 oz., or 17.6 dwts. per ton, was for Konongo's own account.

The 20th Level Odumase has been opened over a length of 900 ft. without disclosing any ore and a diamond drill-hole intersected the vein at a depth of 230 ft. below this level without disclosing any values. Further drilling to intersect this vein 450 ft. below the 20th level is in progress. A crosscut to the Zongo Vein from the 20th Level Odumase is also being driven.

The 9th Level Odumase is being extended southwards but has not so far disclosed anything of interest. The 5th Level Akyenase has also been driven northwards for 780 ft. but no payable reef was found.

BOABEDROO

Only in the Boabedroo section have there been any favourable developments. Here the 9th level, as I reported last year, showed 380 ft. in ore averaging 23.7 dwt. over a width of 58 in. A stope drive has now been opened on the 10th level disclosing ore over a length of 470 ft. averaging 18.1 dwt. over a width of 130 in. This great width, which is quite exceptional in our property, appears to be due to the intersection of two or more fissures at this horizon.

It is clear, however, that the block between the 9th and 10th levels contains a useful tonnage of high-grade ore, but what the behaviour of this vein will be in depth can only be proved by further development, which is being pushed on as rapidly as circumstances permit. It must be remembered that we have not found large ore bodies below this depth anywhere else in the property though the grade remained good in the small bodies followed downward in Odumase.

ORE RESERVES

Ore reserves were re-calculated at September 30, 1951, when they stood at 177,270 tons averaging 15.2 dwt. over 52 in. Of this reserve 60,440 tons is contained in pillars, all of which will not be recoverable.

So far as the future is concerned, it is clear that we can continue at the present reduced tonnage output for some time to come and the increase in the grade of ore available has so far offset to a large extent the reduction in output and the increase in costs.

During the past year the distribution of our total revenue has been as follows:

Out of each pound of revenue we have spent:

	s.	d.
On salaries and wages	5	0
,, supplies and services	4	7
,, London office	0	6
,, Taxation	6	7
,, Depreciation	0	9
,, Plant and machinery	1	0
,, Surplus	1	7
	20	0

NEED FOR STRONG POSITION

Development in the older sections of the property has not disclosed any new sources of ore. In the Boabedroo section the results have been more encouraging and there is still a considerable distance between this and the Odumase section to be explored. The rate at which this can be done as well as extending the development at Boabedroo in depth must necessarily be slow. The Boabedroo shaft through which this must be done is of small dimensions, having been sunk in the first place as a prospecting shaft. Moreover, it belongs to the Lyndhurst company whose ore must be extracted and whose development must also be done through it.

By reason of the fact that we have spare capacity in our plant for the treatment of Lyndhurst ore we are able to maintain this friendly arrangement for joint use of the shaft, but should any substantial new discovery be made in Konongo ground in this area we would have to face heavy capital expenditure on increased shaft capacity, for which reason your directors feel that they should continue to keep the company in a strong financial position.

The report and accounts were adopted.

TRIEFUS & CO.

(Importers and Exporters of Industrial Diamonds)

The Fifth Annual General Meeting of Triefus & Co. Ltd. was held on April 25 in London, **Mr. Albert Triefus** (chairman and joint managing director) presiding.

The following is an extract from his circulated statement:

The fifth year's trading shows a further improvement, the consolidated nett profit being £195,083 against £163,392 in 1950. Income tax and profits tax amounted to £113,617.

£50,000 has been allocated to general reserve bringing this up to £120,000. After this transfer has been made reserves and undivided profits amount to £163,831.

The directors propose the payment of the fixed dividend on the Preferred Ordinary Shares for the first half of the year to December 31, 1951, plus a further 5 per cent per annum for the year ended on that date, making with the interim a total dividend at the rate of 25 per cent per annum, and also 13 per cent on the Ordinary Shares.

The sale and distribution of industrial diamonds has increased considerably during the period under review; this has been due to continued activity in all engineering enterprises both in the sphere of rearmament and that of industry.

EXPORT TRADE

Exports to the United States, Canada, Australia, New Zealand and the Continent of Europe have shown very definite increases where the activities just mentioned have also obtained.

Orders for industrials during the first quarter of 1952 have been well maintained and sales of gem stones through our overseas subsidiaries have reached new high levels.

The increasing demands for many types of diamonds for industrial purposes have denuded the gem market of many of the medium qualities; it is thus possible that in years to come only the finer stones will be distributed to the gem market leaving the majority of the diamond production to industrial consumers.

The company's works and laboratories have been developed during the year by the installation of modern equipment and the incorporation of new manufacturing techniques. A great number of engineering firms in this country, who are engaged upon essential defence and export programmes, rely upon our manufacturing organization for the fulfilment of their diamond tool and diamond powder requirements.

Development in the supply of diamond tools and diamond powders has been much impeded by the insufficient allocations received from the central distributors. The company is, however, in constant touch with the producers, Ministry of Supply, and Board of Trade in their effort to remedy this difficult position.

The report was adopted.

HER MAJESTY'S COLONIAL SERVICE

A vacancy exists for an Inspector of Mines (27099/6) in Fiji. The appointment is on the permanent and pensionable establishment with salary in the scale £F.840-£F.1,300 per annum plus a temporary cost of living at the rate of 10 per cent of salary subject to a maximum of £F.130 per annum (£F.111=£100 sterling). If partly furnished Government quarters provided rent will be charged at approximately 10 per cent of salary; first-class passages on appointment for officer and family to total of four adult fares; on leave, up to a total of three adult fares; leave conditions based on a four year tour, earning four days' leave for each completed month of service. Income tax at low local rates; free medical attendance for officer but not family. Candidates should be graduates of a University or recognized School of Mines or qualified Mine Managers or Mining Engineers. Duties include inspection of mines, quarries and explosives; advising prospectors; general geological work; supervision and preparation of reports.

Intending candidates should apply in writing to the Director of Recruitment (Colonial Service) Colonial Office, Sanctuary Buildings, Great Smith Street, S.W.1, giving brief details of their age, qualifications and experience. They should mention this paper and quote the reference number (27099/6).

SITUATIONS VACANT ADVERTISED.—*The Notification of Vacancies Order, 1952, must be complied with where applicable.*

RHODESIAN ANGLO AMERICAN LTD.

NOTICE TO HOLDERS OF STOCK WARRANTS TO BEARER

Dividend No. 31 Coupon No. 31

With reference to the notice of declaration of dividend advertised in the Press on the 10th April, 1952, the dividend on stock represented by stock warrants to bearer will be paid on or after the 3rd June, 1952, upon surrender of Coupon No. 31 at Barclays Bank (Dominion, Colonial and Overseas), Circus Place, London Wall, London, E.C.2, where listing forms may be obtained.

Coupons may also be presented for payment in French currency at Banque de l'Union Parisienne, 6 and 8, Boulevard Haussmann, Paris, 9e.

Coupons presented at Barclays Bank (Dominion, Colonial and Overseas) must be left four clear days for examination and may be presented any day (Saturday excepted) between the hours of 11 a.m. and 2 p.m.

United Kingdom Income Tax as indicated hereunder will be deducted from dividends payable in respect of stock warrant coupons presented for payment in London unless accompanied by Inland Revenue declarations. Where such deduction is made, the net amount of the dividend will be 10.328d. per 10s. unit of stock, viz:

	Per 10s. unit of stock
	s. d.
Declared dividend	1 3
Less United Kingdom Income Tax at 4s. 9d. in the £ on the Gross amount of the dividend of 1s. 7.672d.	4.672
Net dividend	10.328

For and on behalf of
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24th April, 1952.

W. E. GROVES,
London Secretary.

NOTE

The London Paying Agents have been requested by the Commissioners of Inland Revenue to state:

Under the provisions of Section 348 and the seventeenth schedule of the Income Tax Act, 1952, relating to "Unilateral Relief" from Double Taxation, Northern Rhodesian tax applicable to the Dividend is allowable as a credit against United Kingdom tax payable in respect of the Dividend.

The deduction of tax at the reduced rate of 4s. 9d. in the £ instead of at the standard rate of 9s. 6d. in the £ represents a **provisional** allowance of credit at the rate of 4s. 9d. in the £. The final rate of credit allowable to a particular Stockholder depends on his personal rate of tax: it may be more or less than 4s. 9d. in the £, but must not exceed three-quarters of the personal rate. Revision of the credit involves a corresponding adjustment of the gross amount of the Dividend for United Kingdom tax purposes.

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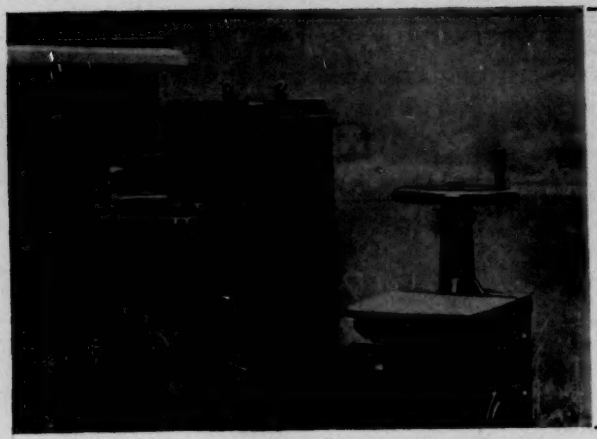

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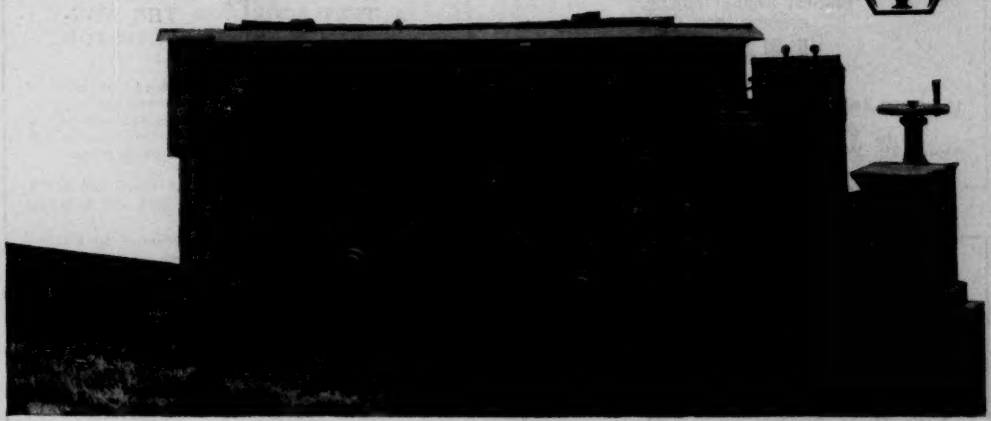

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